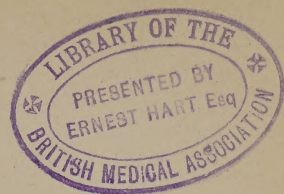






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UNIVERSAL MEDICAL SCIENCES

A YEARLY REPORT OF THE PROGRESS OF THE GENERAL
SANITARY SCIENCES THROUGHOUT THE WORLD.

EDITED BY

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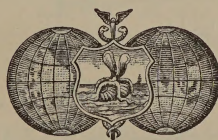
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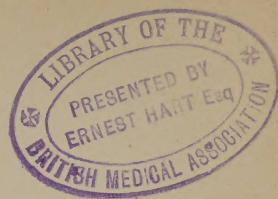
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TABLE OF CONTENTS OF VOLUME SECOND.

- DISEASES OF THE BRAIN, Section A
BY LANDON CARTER GRAY, M.D.,
NEW YORK,
Professor of Nervous and Mental Diseases in the New York Polyclinic;
W. B. PRITCHARD, M.D., AND R. C. SHULTZ, M.D.,
NEW YORK.
- DISEASES OF THE SPINAL CORD, Section B
BY H. OBERSTEINER, M.D.,
VIENNA,
Professor of Neurology in the University of Vienna.
- PERIPHERAL NERVOUS DISEASES, MUSCULAR DYSTROPHIES, AND GENERAL NEUROSES, Section C
BY PAUL SOLLIER, M.D.,
PARIS,
Curator of the Pathological Museum of Bicêtre Hospital.
- TRAUMATIC NEUROSES, Section D
BY J. A. BOOTH, M.D.,
NEW YORK,
Assistant Physician to the Manhattan Eye and Ear Hospital.
- MENTAL DISEASES, Section E.
BY GEORGE H. ROHÉ, M.D.,
CATONSVILLE, MD.,
Superintendent of the Maryland Hospital for the Insane.
- INEBRIETY, MORPHINISM, AND KINDRED DISORDERS, Section F
BY NORMAN KERR, M.D., F.L.S.,
LONDON.
- DISEASES OF THE UTERUS, TUBES, OVARIES, AND PELVIC TISSUES, Section G
BY E. E. MONTGOMERY, M.D.,
PHILADELPHIA,
Clinical Professor of Gynæcology in Jefferson Medical College; Gynæcologist to Jefferson and St. Joseph's Hospitals.

DISEASES OF THE VAGINA AND EXTERNAL GENITALS, Section H

By J. M. BALDY, M.D.,

PHILADELPHIA,

Professor of Gynæcology in the Philadelphia Polyclinic,
AND

W. A. NEWMAN DORLAND, M.D.,

PHILADELPHIA,

Instructor in Gynæcology, Philadelphia Polyclinic.

DISEASES OF PREGNANCY, Section I

By A. LUTAUD, M.D.,

PARIS,

Physician to the St. Lazare Hospital.

OBSTETRICS AND PUERPERAL DISEASES, Section J

By P. BUDIN, M.D.,

PARIS,

Professeur Agrégé of Obstetrics in the Faculty of Paris,
AND

L. MERLE, M.D.,

PARIS.

DISEASES OF THE NEWBORN, TERATOLOGY, Section K

By ANDREW F. CURRIER, A.B., M.D.,

NEW YORK.

DIETETICS OF INFANCY AND CHILDHOOD ; INFANTILE
DISORDERS, Section L

By W. A. EDWARDS, M.D.,

SAN DIEGO, CAL.,

Fellow of the College of Physicians of Philadelphia ; Formerly Instructor
in Clinical Medicine in the University of Pennsylvania.

VOLUME INDEX, Section M

REFERENCE LIST OF JOURNALS.

CONTENTS OF THE ENTIRE SERIES.

VOLUME I.

DISEASES OF THE LUNGS AND PLEURA. <i>Wilson and Eshner</i>	Section A
DISEASES OF THE HEART AND BLOOD-VESSELS. <i>Vickery</i>	Section B
DISEASES OF THE MOUTH, STOMACH, LIVER, AND PANCREAS. <i>Rubino</i>	Section C
CHOLERA; DISEASES OF THE INTESTINES AND PERITONEUM. <i>Griffith and Hunt</i>	Section D
ANIMAL PARASITES AND THEIR EFFECTS. <i>Dolley</i>	Section E
DISEASES OF THE KIDNEYS, BLADDER, AND ADRENALS; URINALYSIS. <i>Lannois</i>	Section F
DIABETES MELLITUS. <i>Lépine</i>	Section G
FEVERS. <i>Semeleder</i>	Section H
DIPHTHERIA, CROUP, PERTUSSIS, AND PAROTITIS. <i>J. Lewis Smith and Warner</i>	Section I
SCARLET FEVER, MEASLES, VARICELLA, AND RÖTHELN. <i>Witherstine</i>	Section J
RHEUMATISM AND GOUT. <i>Davis</i>	Section K
DISEASES OF THE BLOOD AND SPLEEN. <i>Henry and Stengel</i>	Section L
VOLUME INDEX. <i>Devereux</i>	Section M

REFERENCE LIST OF JOURNALS.

VOLUME II.

DISEASES OF THE BRAIN. <i>Gray, Pritchard, and Shultz</i>	Section A
DISEASES OF THE SPINAL CORD. <i>Obersteiner</i>	Section B
PERIPHERAL NERVOUS DISEASES, MUSCULAR DYSTROPHIES, AND GENERAL NEUROSES. <i>Sollier</i>	Section C
TRAUMATIC NEUROSES. <i>Booth</i>	Section D
MENTAL DISEASES. <i>Rohé</i>	Section E
INEBRIETY, MORPHINISM, AND KINDRED DISORDERS. <i>Norman Kerr</i>	Section F
DISEASES OF THE UTERUS, TUBES, OVARIES, AND PELVIC TISSUES. <i>Montgomery</i>	Section G
DISEASES OF THE VAGINA AND EXTERNAL GENITALS. <i>Baldy and Dorland</i>	Section H
DISEASES OF PREGNANCY. <i>Lutaud</i>	Section I
OBSTETRICS AND PUERPERAL DISEASES. <i>Budin and Merle</i>	Section J
DISEASES OF THE NEWBORN; TERATOLOGY. <i>Currier</i>	Section K
DIETETICS OF INFANCY AND CHILDHOOD; INFANTILE DISORDERS. <i>Edwards</i>	Section L
VOLUME INDEX. <i>Devereux</i>	Section M

REFERENCE LIST OF JOURNALS.

VOLUME III.

SURGERY OF THE BRAIN, SPINAL CORD, AND NERVES. <i>Pitcher and Lloyd</i>	Section A
THORACIC SURGERY. <i>Gaston</i>	Section B
SURGERY OF THE ABDOMEN. <i>Bull and Coley</i>	Section C
DISEASES OF THE RECTUM AND ANUS. <i>Kelsey</i>	Section D
SURGICAL DISEASES OF THE GENITO-URINARY APPARATUS IN THE MALE. <i>Keyes</i> and <i>Fuller</i>	Section E
SYPHILIS. <i>White and Furness</i>	Section F
ORTHOPÆDIC SURGERY. <i>Sayre</i>	Section G
AMPUTATIONS, RESECTIONS, AND PLASTIC SURGERY; DISEASES OF BONES AND JOINTS. <i>Conner and Freeman</i>	Section H
FRACTURES AND DISLOCATIONS. <i>Stimson</i>	Section I
DISEASES AND INJURIES OF ARTERIES AND VEINS. <i>Fenger</i>	Section J
ORAL SURGERY. <i>Matas</i>	Section K
TUMORS AND SURGICAL MYCOSES. <i>Laplace</i>	Section L
SURGICAL DISEASES. <i>Tiffany and Warfield</i>	Section M
SURGICAL DRESSINGS AND ANTISEPTICS. <i>Van Imschoot</i>	Section N
ANÆSTHETICS. <i>Burton</i>	Section O
VOLUME INDEX. <i>Devereux</i>	Section P

REFERENCE LIST OF JOURNALS.

VOLUME IV.

DISEASES OF THE SKIN. <i>Van Harlingen</i>	Section A
DISEASES OF THE EYE. <i>Oliver</i>	Section B
DISEASES OF THE EAR. <i>Turnbull and Bliss</i>	Section C
DISEASES OF THE NASAL AND ACCESSORY CAVITIES, PHARYNX, LARYNX, TRACHEA, AND OESOPHAGUS. <i>Sajous</i>	Section D
INTUBATION OF THE LARYNX. <i>O'Dwyer</i>	Section E
DISEASES OF THE THYROID GLAND. <i>Clark</i>	Section F
LEGAL MEDICINE AND TOXICOLOGY. <i>Draper</i>	Section G
MEDICAL DEMOGRAPHY. <i>Levison</i>	Section H
BACTERIOLOGY. <i>Ernst</i>	Section I
VOLUME INDEX. <i>Devereux</i>	Section J

REFERENCE LIST OF JOURNALS.

VOLUME V.

GENERAL THERAPEUTICS AND PHARMACEUTICAL CHEMISTRY. <i>Dujardin-Beau-</i> <i>metz and Dubief</i>	Section A
EXPERIMENTAL THERAPEUTICS. <i>Hare and Cerna</i>	Section B
ELECTRO-THERAPEUTICS. <i>Rockwell</i>	Section C
GYNÆCOLOGICAL ELECTRO-THERAPEUTICS. <i>Apostoli and Grand</i>	Section D
HYDROTHERAPY, CLIMATOLOGY, AND BALNEOLOGY. <i>Baruch and Daniels</i>	Section E
HYGIENE AND EPIDEMIOLOGY. <i>Wyman and Banks</i>	Section F
ANATOMY. <i>Testut and Vialleton</i>	Section G
NORMAL HISTOLOGY AND MICROSCOPICAL TECHNOLOGY. <i>Sajous</i>	Section H
PHYSIOLOGY. <i>Howell and Dreyer</i>	Section I
GENERAL INDEX. <i>Kyle and Devereux</i>	Section J

REFERENCE LIST OF JOURNALS.

DISEASES OF THE BRAIN.

By LANDON CARTER GRAY, M.D.;
W. B. PRITCHARD, M.D.; AND R. C. SHULTZ, M.D.,
NEW YORK.

LOCALIZATION.

Charcot, the illustrious and venerated master of neurology in France, whose death was a most lamentable loss to the neurological world and to mankind, had in preparation, in collaboration with Pitres, a work on the anatomico-clinical method as applied to the study of localization, upon which he was engaged up to within a few weeks of his final illness. The first pages have been recently published, ⁹⁴_{Apr., '94} and so sound are the teachings therein that they may very appropriately constitute our introduction to the subject as reviewed in this ANNUAL. Having stated the fact that two methods, the experimental and the clinico-anatomical, are in vogue, he gives decided preference and weight to the latter, since the experimental facts observed in animals, owing to the differences, physiological and anatomical, may not apply to man. The following principles, simple enough, but not always observed, are outlined as of vital importance in such studies:—

1. Reject without hesitation, as not applicable in the study of cerebral localization, all observations, ancient or modern, in which the symptoms have not been regularly noted during life and the lesions minutely described after death. 2. Reject, as not applicable in the study of cerebral localization, all cases of multiple or diffuse lesions, of meningitis, encephalitis, meningeal hæmorrhage, tumors, etc., in which the phenomena due to irritation of adjacent parts or to compression at a distance are associated with the effects of the limited destructive nervous lesions and give rise to complex symptoms the origin of which cannot specifically be attributed to a particular lesion. 3. Do not admit a functional localization unless the demonstration has been founded upon a series of coherent, positive facts, indirectly controlled by a series of

negative facts. (By negative facts is meant absence of lesion of the given part in all cases where the recognized function of the part persisted.) 4. Whenever a localization has been established by a large number of concordant facts, one need not doubt its reality because there are presented, from time to time, apparently contradictory cases. It is only necessary to seek some other explanation of the latter.

Such principles are so self-evidently forceful as scarcely to require further emphasis, but they have none the less been sadly neglected, to the confusion of the subject and with much attendant loss. It is with the hope that the source of the advice in this instance, rather than its originality, may give weight and emphasis to the teachings, resulting in their observance, that these principles are recapitulated.

Motor Centres.—Brissaud ⁷³_{Dec. 30, '93} relates the history, with results of post-mortem, of a man affected with recurring attacks of right hemiplegia, facial paralysis, and aphasia, which lead him to express the belief that the facial centre for movements is on the ascending parietal operculum immediately posterior to the inferior extremity of the fissure of Rolando, this spot being the site of an isolated lesion of yellow softening in the patient whose history is related. A very interesting and instructive case illustrating the surgical value of a knowledge of cerebral localization is reported by Péan. ⁶_{Dec. 9, '93} The patient, a girl aged 4 years, was accidentally shot in the right eye, the bullet—a small one—entering the deeper cerebral structures after traversing the orbit. The acute symptoms were not of localizing significance, but later there developed a left facial paresis with complete flaccid monoplegia of the left arm. A trephine-opening over the mid-Rolandic area of the right side revealed an abscess occupying the arm-centre. The pus was evacuated, the cavity drained, and a perfect recovery subsequently attained. Farkas ²_{Jan. 6, '94} communicates a note upon the value of the movements of the head and eyes in the localization of cerebral disease. Mitra ¹⁰⁵⁵_{May 1, '94} relates several clinical cases illustrating the application of principles of localization to cerebral surgery and diagnosis.

The Visual Centre.—Very little new light, either clinical or experimental, has been added to the existing information upon this subdivision of localization. Ewens ⁴⁷_{Winter, '93} proposes a theory of

double visual representation which he thinks reconciles existing differences of opinion and apparently differing results of experimental investigation. Briefly summarized, his theory involves an acceptance of the belief that "there is a separate and distinct representation of the macula lutea and the correlated retinal halves in the cortex; that the macula lutea, and that only, is represented in the angular gyrus, chiefly of the opposite side, but to a smaller extent of the same side also, the representation being the bilateral one enunciated by Ferrier and now largely accepted; while each occipital lobe serves for the representation of the correlated halves of the same-named side of each retina, but without the macula lutea of either, which is represented in the angular gyrus, as before said." The paper contains an analytical review of the facts of clinical and experimental localization which apparently support the position assumed by the author, but a much more plausible and logical interpretation of the facts bearing upon the subject is to be found in the acceptance of a psychical and physical subdivision of this sense, which would indicate a cortical representation for vision proper in the occipital lobes (cuneus), while visual memories are in relation to a cortical representation in the region of the angular (and possibly the supramarginal) gyrus. Zimmerman¹⁹_{Nov. 25, '93} presents a critical study of the anatomical and physiological research on the relations of the ocular nerves to the brain. Mount, Recken, Liebrecht, Mendel, Kneiss, Henschen, and numerous others in this field are quoted *in extenso*, and the facts presented constitute a valuable *résumé* of the literature of the subject to date. Magnus¹³_{Apr., '94} relates a case, without autopsy, of left-sided homonymous hemiopia, in a man aged 39, in conjunction with an attack of left hemiparesis of sudden onset. The paresis disappeared, but the visual defect remained, with a tendency to headache. Ten years later another seizure occurred, with loss of consciousness. A third attack occurred without loss of consciousness or paralysis, but with right-sided hemianopsia, and in addition there was observed a loss of the sense of locality, the patient being unable to find his bed, etc. The lesion was supposed to be one of association fibres.

The Auditory Centre.—Herdmann²⁴²_{Sept., '93} relates the history and post-mortem findings in a case of hæmorrhagic softening of the anterior extremity of the superior, middle, and inferior temporal

gyri and the anterior half of the hippocampus of the right hemisphere in a left-handed woman. The clinical observations made during life were, unfortunately, so meagre as to render the case practically valueless for deductions as to localization. She is said to have manifested pure deafness in the opposite ear and to have had impairment of taste, but no observations are recorded which indicate that the location of the lesion was suspected or that any investigation of symptoms bearing upon psychical hearing were made.

Common Sensation.—Everett Flood, ^{July 28, '94} under the auspices of the Scientific Grants Committee of the British Medical Society, and in conjunction with Schäfer, has experimentally studied the relations of motor and sensory disturbances from lesions of the Rolandic cortex. The method was that of isolating incisions, and the subjects of the experiments were monkeys. The face-centre was the area incised, for two reasons: first, because it is farthest removed from the postero-mesial aspect, and it was therefore easy to avoid injury of the fibres of the gyrus fornicatus, destruction of which has been shown by Horsley and Schäfer to produce marked hemianæsthesia; secondly, because the paralysis affects the cheek-pouch, and it was possible, from the natural action of the animal, to determine whether tactile sensibility was present in that part, since the animal will always empty the cheek-pouch if full of food, either by the natural action of the cheek-muscles or by pressing the contents out with the hand, provided there is sensation evidencing the presence of food. Six animals were operated upon, and four of these were operated upon at a later date on the opposite side, making in all ten experiments, the results in each being the same. In all cases the side of the face opposite the incised centre was paralyzed, and the motor paralysis was invariably accompanied by sensory paralysis at first; so that the pouch into which food passed remained full, the animal apparently not realizing its presence. Tested with a spring clip, the entire side of the face was found to present very decided dulling of sensibility. The sensory disturbance was always evanescent, disappearing usually in three days. They conclude, therefore, that "tactile sensibility is recovered, but the motor paralysis remains; the latter therefore is not dependent upon the former, although in the first instance accompanied by it." Ultimately,

after some weeks the motor paralysis largely, if not entirely, disappeared. A second operation was then performed upon the intact side of the brain in the opposite facial area, and the corresponding pouch became paralyzed as did the first; the first pouch, however, was not thrown back into a state of paralysis, but retained its recovered power. "This recovery, therefore, is not due to the function of the region in the one hemisphere being taken up (after mutilation) by the corresponding region in the intact hemisphere," but must, as they suggest further, have been due to the action of lower centres. These experiments and the resulting conclusions are of much interest, and, while of a largely-negative character, are suggestive of an hypothesis which would give to common sensation a double representation, as in vision,—one for sensation proper, possibly in the so-called motor area rather posteriorly; the other in the gyrus fornicatus for higher sensation or storage of common sensory impressions.

A very interesting case, which is in apparent direct contradiction, in some respects at least, to the experimental conclusions of Flood and Schäfer, is reported by J. Lynn Thomas.² Feb. 24, '94 The patient, a man aged 44 years, was struck on the head, receiving a limited fracture of the skull, in 1891. The wound was treated surgically; the fractured fragments which had penetrated the cerebral tissues were removed, the wound dressed antiseptically, and an uneventful recovery occurred, without pus, elevation of temperature, or disturbance of any cerebral function except those in direct relation to the site of injury, which was over the arm-centre of the left Rolandic area. The patient did not lose consciousness, but became quite pale and complained of severe pain in the right shoulder, although there was not the slightest evidence, from contusions or the appearance of the clothing, that the shoulder had been touched. The right arm was completely paralyzed, including scapular movements. Following the operation, recovery of motion and sensation, which had been totally lost and seriously impaired, took place gradually; but at the end of three years, while able to resume his duties as a locomotive engineer, possessing practically normal motor power in the affected arm, there were evidences of persistent perversion and partial loss of several forms of common sensibility.

The subject of pain and hyperæsthesia, in their relation to a

central origin, is discussed from a clinical stand-point by Bier-nacki.⁶⁹_{Dec.28,'93} Head⁴⁷_{Autumn,'94} discusses the disturbances of sensation with especial reference to the pain of visceral disease. Numerous illustrations exemplifying facts observed in the anatomico-physiological aspects of the subject, add to the value of this paper, which constitutes an important step in the direction of a clearer and more practical knowledge of the various painful neuroses.

Anton⁶⁸_{Apr.,'94} makes a contribution to the subject of the muscular sense in its relations to a cortical origin. Grainger Stewart²_{Nov.11,'93} publishes short notes of a case of allochiria occurring in a man who presented many symptoms suggestive of hysteria.

The Thermogenetic Centre.—Jean Félix Guyon,⁹⁹⁶_{Feb.25,'94} in a thesis on hyperthermia (high temperature) consecutive to lesions of the cerebro-spinal axis, especially of the brain, divides his subject into two parts,—clinical and experimental. After Wunderlich, many authors had confirmed the occurrence of hyperthermia in the preagonic state of cerebral maladies, sometimes of spinal maladies. The same results were obtained by Charcot and Bourneville in the true apoplectic attack. Cerebral traumatism produced at first either sudden diminution or elevation of the temperature, immediately followed by a medium, stationary temperature, and then a marked preagonic exaggeration, or else a gradual return to the normal. It was nearly the same in spinal traumatisms. These conclusions were based on fifty-four cases and were confirmed by experimentation, but the author had not been able to produce the hyperthermia except by deep pricking within the brain, involving the central gray matter, more especially the caudate nucleus. But the highest elevation (1° to 2° C.—1.8° to 3.6° F.) was never reached except when the stylet penetrated the lateral ventricle; and the question suggested itself as to whether it was not simply a reflex action exerted upon the medulla and cord through irritation of the ventricular walls. Dana, in a paper⁵_{June,'94} upon the same subject, especially as regards the relation of apoplexy to temperature-changes of the body, formulates conclusions as follows: "1. All intra-cranial hæmorrhages, whatever the lesion, are much more apt to be accompanied with immediate disturbances of temperature than are necrotic processes from embolism and thrombosis. These temperature disturbances in hæmorrhages are: in rare cases, a sudden initial fall; then in

almost all cases, except where the lesion is small, there is, within a day or two, a rise of temperature of one to three degrees. On the other hand, this initial fall and early rise do not occur in acute softening unless the process is very extensive or involves the pons. 2. In apoplexy due to hæmorrhage the temperature is greater upon the paralyzed side than upon the normal, the difference averaging about one degree. In acute softening this unilateral difference of temperature does not occur or is extremely slight. 3. The rise of temperature due to apoplectic lesions depends more upon the extent and nature of the lesion than upon its location. Lesions of an hæmorrhagic character in the cortex, however, are especially apt to cause a rise of temperature. Lesions in the pons are also of hæmorrhagic or softening character and almost uniformly cause a rise of temperature. 4. There is as yet no clinical evidence that lesions of the basal ganglia or the parts about them cause temperature rises on account of destruction of certain thermic centres; in other words, the clinical and pathological evidence of thermic centres in the human brain, aside from the parts mentioned, is inadequate."

The Frontal Lobes.—Bianchi, ⁴ Mar. 26, '94 from experimental studies upon dogs and monkeys, is led to oppose the views of Munk and Goltz, that intelligence has its seat through the gray matter of the cortex cerebri, believing, with Hitzig, that the frontal lobes are the special organs of intelligence. D'Abundo ⁹⁹⁶ Apr. 25, '94 also writes upon this subject from a clinical stand-point, recording five observations which support the accepted opinion that the prefrontal lobes represent psychical function.

The Pituitary Body.—The pituitary body is attracting a degree of attention and investigation which promises much light upon the hitherto rather vague origin and function of this organ. Andriezen ² Jan. 13, '94 publishes the results of studies upon which he has been engaged for three years past, carried out in the line of morphological investigations and experiments upon the lower vertebrate animals, after the method of Darwin. He finds that the essential function of the pituitary body is that of a trophic action upon the nerve-tissues, enabling them, on the one hand, to take up and assimilate oxygen from the blood-stream, and, on the other, to destroy and render innocuous the waste products of metabolism, the two functions being intimately related. The

predicable results of the ablation or destruction of the gland would therefore be, in general terms, according to the author: 1. Depression and apathy (the commencing failure of activity in the nerve-centres). 2. Muscular weakness (the first peripheral effect). 3. Loss of fine co-ordination and equilibration (correlated to 1 and 2). 4. The development of twitchings and irregular contractions (spasms) of the muscles (in relation to the further progress of nutritive failure of the nerve-centres). 5. A want of sufficient heat production and subnormal temperature. 6. A wasting of the body-tissues (in relation to the more rapid failure of nutrition of the central nervous system). 7. A probable compensatory polypnœa or attacks of dyspnœa (the peripheral indication of the failure of the nerve-centres to assimilate oxygen). 8. A rapid progress toward death. Future research must negative or confirm these statements.

Remarkably similar conclusions have been published by Vassale and Sacchi,⁸⁵⁴_{May, '94} as a result of experimental studies upon dogs in which the pituitary body was excised or destroyed *in situ*.

The Cerebellum.—In his presidential address to the London Neurological Society Ferrier⁴⁷_{Spring, '94} takes as his subject "Recent Work on the Cerebellum and its Relations, with Remarks on the Central Connections and Trophic Influence of the Fifth Nerve." He reviews the recently-published researches in this field by Luciani and Marchi, and especially commends the work done by the first-mentioned writer, the importance of which cannot, he states, be overestimated. He accepts as proven by these experimental studies the fact that the cerebellum has no share in psychological manifestations, and that its removal caused no discoverable impairment of any of the special senses or of any of the forms of cutaneous or muscular sensibility. It has no relation to sexual impulse or desire, as evidenced in the transformation of Luciani's laboratory into a hot-bed of wanton licentiousness and consequent pregnancies and parturitions. Nothnagel's theory that the middle is essentially the lobe of function is also, he believes, disproven, and the influence of the cerebellum is direct and not crossed,—a fact demonstrated by Luciani and in accord with his own observations. With regard to the phenomena of rotation toward the side of the lesion as a means of localizing a lesion in cerebellar disease, he still believes that this is true, notwithstanding certain contra-

dictory results attained by Luciani. Lesions of the peduncles most certainly and consistently illustrate this fact. In discussing the theories as to the explanation for the various ataxias resulting from cerebellar lesion or destruction, the terms "asthenia" and "atonia" are rejected as inadequate and unsupported by facts. Astasia more aptly applies as a term of description, but how the astasia is conditioned is still unanswered and remains the key to cerebellar function.

From the anatomico-physiological stand-point he believes the superior peduncles proper to be the efferent in function, degeneration after extirpation extending from the cerebellum up to the opposite nucleus and optic thalamus. The tract corresponding to Gowers's antero-lateral column degenerates, however, toward the cerebellum, and the middle cerebellar peduncle also appears to be efferent from the lateral lobe to the opposite nucleus frontis; while the inferior cerebellar peduncle contains both efferent and afferent fibres, the latter by Clark's column and the direct cerebellar tract, as well as by the vestibular branch of the eighth and, perhaps, other cranial nerves. The tract forming the internal division of the restiform body, termed by Edinger the direct sensory cerebellar tract, is, he says, efferent in the direction of degeneration after section of the middle lobe. Beyond these mentioned, there is, he says, no proof of the existence of any other efferent tract from the cerebellum to the spinal cord.

The experimental studies which formed the basis for Ferrier's conclusions and criticisms of Marchi's results are reported in further detail by Turner²_{Aug. 21, '94} and Risien Russell.²_{July 23, '94} A case of much importance in its direct bearing upon this subject is reported, with results of autopsy and subsequent pathological study of sections, by Campbell.¹⁸⁷_{Jan., '94} The case was one of softening of the cerebellum from thrombosis of the left inferior cerebellar artery. Briefly, the secondary descending degeneration is said to have involved the direct cerebellar tract almost completely, and to a less extent Clark's column, the antero-lateral columns of Gowers, and the column of Burdach, while scattered fibres which had degenerated were found in the crossed pyramidal columns. The contradiction apparently offered by this case, of the dictum that the direct cerebellar tract is essentially a centripetal bundle, is revolutionary in its conclusions; and, while the report reflects

methods of study and investigation which were apparently conclusive as to the pathological facts, the results demand further consideration and confirmation before final acceptance.

Dercum²⁴²_{Oct., '93} writes a clinical paper bearing upon the significance of optic neuritis, blindness, deafness, and the knee-jerks in cerebellar disease.

Visceral Centres.—While it is true that accepted teachings as to cerebral or cortical localization or representation of vital functions apply only to those functions which are volitional or under the domination of mind, there are certain of these functions which are partly volitional and partly automatic or reflex, which, it seems probable, are in relation to representative cortical areas. The sexual function, for example, is clearly related to psychical impressions and impulses, as is true, though perhaps to a less extent, of the functions of the bladder and rectum. The heart, as is evident in the effect of emotional influences, is controlled to a certain extent by cerebral impulses. A case of epilepsy of the cardiac variety, referred to in this article under that subject, affords evidence of the probable existence of a cortical cardiac centre, though its exact location is not determined. Another case of epilepsy, in which major attacks of the Jacksonian type, the initial movement manifesting itself in the face, were replaced by minor attacks of paroxysmal discharges of saliva in large quantities, seems to point to the existence of a centre—somewhere in or near the centre for the face—stimulation or irritation of which provoked free salivation. Bechterew,⁷⁵_{No. 2, '94} who has given special attention to this subfield of localization, has found experimentally, like Ostankow, that respiration as a function is apparently in relation to an area in the upper edge of the second frontal convolution, irritation of this point in dogs being followed by rapid respiration with prolonged expiration. At the anterior extremity of the second frontal, at a point which would be bisected by a prolongation of the crucial sulcus, he found that irritation caused quite well marked and constant movements of deglutition. The proximity of the two areas was consistent with their physiological relationship.

APHASIA.

The etiological relation of certain conditions to aphasia is the subject of papers by Chereau,²¹²_{May 25, '94} Chantemesse,⁵⁹_{Feb. 3, '94} and Cowe.²³⁶_{v. 20, No. 7}

The first-named writer adduces evidence, in a number of cases collated from literature, which would seem to indicate that tobacco may cause temporary aphasia which, if the habit is continued, may prove grave. Chantemesse describes several cases of ataxic aphasia during pneumonia. In every case there was paresis and weakness of the right face and right arm. The cause was supposed to be the action of pneumonococcous toxins. Cowe reports four cases of aphasia occurring during the puerperal period, and adds sixteen others from literature. It is sometimes hysterical; in others it is uræmic. In nearly one-half of the cases the aphasia is associated with right hemiplegia and due to embolism or thrombosis. Having occurred in one pregnancy it is liable to recur in the next, and usually appears about one week after delivery.

Motor Aphasia.—The monograph published by Wylie will constitute a standard work of reference, ²⁶Oct., '93 to May, '94 invaluable to the student in this field of neurology. The paper succeeding the last one referred to bears upon the subject of aphasia in relation to organic disease of the brain. Motor aphasia, with its various subdivisions and their relations to various areas in the speech-centre of Broca and the adjacent cortical fields, is discussed, chiefly from the clinico-pathological stand-point, as illustrated in a series of selected cases which have been carefully and elaborately studied. The motor speech-centre is capable, in the author's opinion, of further subdivision into subareas representing various perversions of function which are in relation, through isolated lesions, to the subtypes of motor aphasia, including the ataxic and the amnesic, the agraphic and others; but our information upon this aspect of the subject is meagre, and we need additional evidence. That this area is capable of further and much more extended subdivision is attested by numerous facts of a clinical character. A case in point is reported by Brissaud, ³Aug. 1, '94 whose patient was the subject of total aphasia of articulation, but was able to intone the voice intelligently, as one does in speech. There was no agraphia, and words were readily understood. A case of pure motor aphasia, with ability to read and to write down thoughts fluently with the left hand, due to extensive softening, principally affecting the left frontal convolutions and bordering central convolutions, but extending deeply, even to the internal capsule in the white substance, is reported by Kostenitsch. ³¹⁹Mar. 31, '94 The cortex of the left

frontal was most affected. The pupils were small and without reaction to light, vision was retained, and ophthalmoscopic examination was negative. The case was in accord with the statement that ability to understand words might be retained in complete involvement of the frontal convolutions, and that agraphia does not, as claimed by some, belong to Broca's aphasia. Of greater interest was the fact that the ganglion-cells of the principal oculo-motor centres were normal, while in the lower groups of the Westphal-Edinger centres were slight changes, causing shriveling of the nerve-cells. This lesion, possibly, was the anatomical substratum of the fixed pupil. Total motor aphasia and partial agraphia with right hemiplegia occurred in a patient of King's, ¹⁷⁰_{Jan., '94} who published clinical notes of the case, but without autopsy. De Léséleuc ²²⁰_{Oct. 6, '93} and Trawick ¹²⁰_{Feb., '94} also report clinical examples of motor aphasia. Preston ⁹⁹_{Nov. 2, '93} writes upon the localizing value of aphasia in operations for cerebral disease.

Agraphia.—Wylie recognizes three subvarieties of agraphia: (1) that due to the amnesia verbalis which results from a lesion of the lower posterior region of the operculum and island of Reil, (2) that due to the amnesia literarum from a lesion of the angular and supramarginal gyri, and (3) a partial agraphia, displayed, at least, in the performance of the right hand, and due to lesion at the posterior extremity of the second left frontal, immediately in front of the centre for the hands. Ballet ⁵⁷_{May 6, '94} considers the foot of the second frontal the true graphic motor centre; while Longues thinks ⁹⁹⁶_{Apr. 10, '94} the evidence of such a centre is purely presumptive, he having observed a case of agraphia in which this centre was found intact, and there was destruction of the convolution, the left angular gyrus, and optic radiations, producing word-blindness. An interesting case of motor aphasia and agraphia, without sensory defect of speech or hemiplegia, is related by Henry Waldo. ²_{Jan. 6, '94}

Auditory Aphasia.—Mader ⁶⁵⁰_{No. 8, '94} relates the case of a woman, aged 50 years, attacked suddenly with unconsciousness, followed by total aphasia for three days. Afterward she could and did speak almost constantly, but unintelligently. Her hearing was not affected except that she could not understand words. There was no soul-blindness, as objects were used correctly and household work attended to properly. There was no disturbance of taste, smell, sensation, or motion. The whole disturbance was psychical.

Four months later right hemiplegia developed without loss of consciousness, but suddenly, and death occurred ten days later. Autopsy showed yellow and white softening of the left upper and middle temporal convolutions, and yellow softening of the posterior convolution of the left island of Reil and the posterior half of the operculum. The primary lesion was of the area proved by Munk and Ferrier to be in relation to word-hearing, producing the complete word-deafness and meaningless paraphrasia. The right temporal and third left temporal not being involved, simple hearing was not disturbed. The case constitutes a valuable clinical confirmation of accepted teaching as to the localization of speech-memories. A somewhat similar case ²¹¹_{V.1,p.551,'94} was that of a man who, as the result of an apoplectic attack, became affected with word-deafness without motor or sensory involvement of the extremities, but with inability to whistle or lift the tip of the tongue. He could write his name or anything dictated to him, but could not remember afterward what he had written. At the autopsy a softened spot the size of a two-franc piece, in the left first and second temporo-sphenoidal convolutions, was the only lesion. Clinical cases of aphasia of mixed type, with marked word-deafness, are related by Tomkins, ²_{Apr.23,'94} Mantle, ²_{Apr.28,'98} and Ord and Shattuck. ²_{Mar.24,'94}

Visual Aphasia.—Wylie prefers this term to word-blindness, since destruction of the centre producing it—the supramarginal and angular gyri—causes not only word-blindness, but also agraphia of a certain form. He believes that the conclusions of Ferrier, on the one hand, and of Monk, Seguin, and others, on the other, as to the localization of the cortical centre for vision, are both partially correct, the occipital lobes (cuneus and calcarine fissure,—Munk, Seguin, and others) representing the centre for primary visual impressions, while the angular and supramarginal gyri (Ferrier) constitute a higher centre representing the storage of visual images of objects and words. Simple word-blindness without agraphia results from lesions cutting off connection between the centre for simple vision in the occipital lobes and the storage-centre, while a lesion of the latter (*pli courbe*) causes both word-blindness and agraphia. It is really the distinction already recognized in the terms cortical and subcortical word-blindness, elaborated by Wernicke, Lichtheim, Dejerine, and Sérieux. Shaw reviews ⁴⁷_{Winter,'98} the literature of sensory aphasia, and from a study of

several cases, together with one of his own, reaches the conclusion that the essential centre, lesion of which produces word-blindness, is the angular gyrus, there being but little evidence tending to show that the supramarginal gyrus has anything to do with this phenomenon.

Well-reported cases of word-blindness have been published by Bianchi,⁴_{No.14,'94} Bleuler,³⁶⁸_{v.25,p.32,'93} Bruns,⁷⁵_{Jan.1,'94} and Longues.⁹⁹⁶_{Apr.10,'94}

Amimia and Paramimia.—Mills,²¹²⁴_{'94} in a study of the disorders of pantomime in aphasia, recognizes a receptive, or sensory, and an emissive, or motor, type. Nine cases are analyzed. The results indicated that, the more complex the type of aphasia, the more exaggerated was the disorder of pantomime. Mills thinks the study of pantomime involvement in cerebral disease may prove of importance in the diagnosis in subcortical lesions. Some of the cases showed that when the lesion was entirely in the straits between the ganglia, the corona radiata escaping, pantomime was either not lost or soon entirely regained.

Amusia.—Ireland,¹⁶⁶_{July,'94} writes very entertainingly of the defects of the musical sense occurring in aphasics and as a result of disease, reaching the following conclusions: "The area of the brain through which musical feeling and activity are realized is not confined to the convolutions of the left hemisphere implicated in motor and sensory aphasia. It seems to me that the musical faculty must be exercised on both sides of the encephalon. Whether its activity depends upon a circumscribed portion of the brain seems doubtful. It would be desirable to have observations to solve the question whether diseases of the right hemisphere may cause loss of the power of singing, following, or reproducing melodies. I am inclined to think that this power could only be extinguished by lesions on both sides of the brain at once. It also seems to me that the musical faculty may still survive after extensive brain diseases which have more deeply impaired the more complex mental faculties."

Treatment.—Gutzmann,⁴¹_{Feb.8,'94} reports three cases of aphasia treated by practice in writing with the left hand. Those of centro-motor aphasia so treated were markedly improved in a few months; but Gutzmann was in accord with those who took part in the discussion (Jolly, Jastrowitz, and Goldscheider) that no conclusion could be drawn as to whether the improvement was

due to cultivation of the speech-centres in the right hemisphere. Centro-sensory aphasia was best treated by loud speech or singing, the patient at the same time observing the movement of the lips. Giampietro¹⁶⁴_{May 3, '94} reminds Gutzmann that he had employed the method of calling the left hand into use in writing before the latter. He does not place much importance upon it except as one form of systematic training of centres not destroyed, but capable of more complete restoration or more perfect development. A remarkably instructive case, illustrating the value of skillful perseverance in the treatment of aphasia, is reported by Kuchler.⁸⁸_{Oct. 18, '93} The patient, a man 27 years old, after a cold bath became suddenly unconscious. With a return to consciousness he was found to be affected with a right hemiplegia and total aphasia. The diagnosis was embolus of the Sylvian artery. Nine years later he was still hemiplegic and, except the utterance of one or two meaningless syllables, absolutely speechless, being unable to speak voluntarily, repeat words, or write voluntarily or from dictation. There was no alexia or word-deafness and he could copy words. The attempt was made to educate the right hemisphere, which, through the intelligent and conscientious co-operation of the patient, resulted, within six weeks, in the acquirement of a vocabulary of more than one hundred words and several invaluable short sentences. An editorial writer²_{Feb. 24, '94} makes an earnest appeal to the charitably inclined for funds with which to endow either separate institutions or departments in existing hospitals for the educational treatment of stammerers and stutterers, many of whom are absolutely incapacitated for employment by reason of their misfortune. Kershaw²_{Mar. 3, '94} writes in reply that the Central London Throat Hospital has had such a department for fifteen years, where patients are given weekly treatment, many of them with marked benefit.

PARALYSIS.

Infantile Cerebral Paralysis.—Microcephaly, in association with infantile hemiplegia, is the subject of a paper, reflecting careful studies of an example of this type, by Thompson, of Edinburgh.²⁷⁷_{July, '94} The paper contains a comprehensive review of the literature and constitutes a valuable addition, from a pathological stand-point, to the facts accumulated in recent years in this field.

The relation of abnormal birth to certain cerebral affections

in children is the subject of a paper by Newmark, ⁷⁷ July, '94 who narrates the histories of eleven examples of various forms of infantile cerebral paralysis of apparently obstetrical origin. Kœnig ⁶⁹ Oct. 19, '93 relates a case in which the paralysis came on at the age of 7 years, after a period of status epilepticus, the child having had convulsions from the tenth month of life. The face was involved in the paralysis,—a fact observed by the author in 24 of 46 cases which he had studied. In 17 of these 24 cases mimetic movements were also lost. Fisher ⁹ Nov. 2, '93 and Peterson ¹ Dec. 23, '93 each report cases with autopsy. Clinical papers are furnished by Blocq, ² Mar. 3, '94 Donath, ⁶ Sept. 30, '94 and Funkhouser. ⁸² July 14, '94 Donath's case resulted from diphtheria. Plicque ⁵⁵ May 5, '94 and Judson ⁹⁹ Dec. 21, '93 write upon treatment.

Hemiplegia.—An unusual cause of hemiplegia is recorded by Pérochaud, ¹²⁷ Sept., '94 from inhalation of oxide of carbon. The face was not involved, but the attack began with coma, which continued more or less complete for four days; and yet the author looked upon the case as one of peripheral neuritis. Uræmia, as a cause of transient and persistent hemiplegia through so-called serous apoplexy, is discussed in a paper by Wilcox. ⁵ May, '94

Jacobson, ⁴¹ Aug. 13, '94 in a very important contribution upon this affection without corresponding lesion, reports 6 cases coming under his own observation in which typical symptoms were present. In 3 nothing except a general atheromatosis of cerebral vessels was found; in 1 uræmia was considered to have been the cause; in another, miliary tuberculosis; while the sixth remained absolutely unexplained; 32 similar cases are collected from the literature; nearly all were in patients over 60 years; 10 showed arterio-sclerosis; 10 gave a history of uræmia; in 4 previous tuberculosis existed; and 2 cases followed pneumonia. More careful pathological examination would have probably reduced this number by one-half. J. Mitchell Clarke ⁶ Aug. 4, '94 relates a case of similar character in a woman of 60 years, who died a month after an apoplectiform attack resulting in right hemiplegia, in whose brain no sufficient focal lesion was found post-mortem, although the left lenticular nucleus appeared "doubtfully" softened.

Duroziez, ²² Aug. 22, '94 writing of hemiplegia secondary to cardiac disease and particularly mitral stenosis, states that while the latter may give rise to vertigo, syncope, etc., it does not produce paralysis before the age of 45 years, and that it is rare in men, only

four such cases occurring in a series of forty-seven. Neither statement is in accordance with the facts of common experience, and will require further corroboration before their acceptability is established. Riley⁸⁵⁵_{Dec., '93; Jan., Feb., May, '94} publishes an extended paper, with several clinical cases, upon the "Voluntary Motor Mechanism and Some of its Diseases," which includes several examples of hemiplegia of more or less interest. The differential diagnosis of various forms of paralysis is the subject of papers by Punton⁸²_{July 21, '94} and Diller.¹⁶¹_{Mar., '94}

Brissaud,⁵⁷_{Mar. 25, '94} in a clinical lecture, considers the subject of spasmodic laughing and crying, especially the varieties seen in cerebral hemiplegia. Bechterew's case is cited; the muscles and their nerve-supply brought into activity in laughing and crying are mentioned, and also the fact that not all the motor gray centres of the given nerve, as the facial, are brought into play in equal degree. The influence of the cortex in laughing is considered to be transmitted through the optic thalamus. Two cases of convulsive laughing and crying were presented,—one of hemiplegia, the other of disseminated sclerosis of hemiplegic form. The lesion giving rise to this, the author states, is located in that part of the internal capsule known as the psychical bundle,—an emanation of the Arnold bundle or anterior root of the thalamus, and which most directly connects the frontal region with the gray centres of the basal brain and bulb. In connection with Brissaud's important observations, a paper by Féré¹⁴_{Oct. 25, '93} is of much interest. This author states that the facial muscles in hemiplegia are unequally affected, the orbicularis oris being less paralyzed than the levators of the lips, the former sometimes escaping entirely. Rudolphe Kalisch¹⁰⁰⁵_{V. 4, No. 1} concludes, from a study of two cases of his own and from others in literature, that post-hemiplegic movements do not point especially to the optic thalamus, but rather to irritation of the pyramidal, more especially in the lower part of the cerebral, peduncles. The facts of physiology and observation would seem to indicate, however, that irritation of any part of the motor pathway from the cortex to the cord might induce such movements. Hughlings-Jackson,⁶_{Apr. 28, '94} whose neurological eye nothing apparently escapes, has been led, by the accidental observation of certain phenomena of deviation of the eyes while under chloroform, to a further study of this symptom. The

results have not been yet published in full; but they apparently support the author's hypothesis that "a patient, hemiplegic on the right, who has recovered from turning of his eyes to the left, has, nevertheless, lost permanently some movements for turning the eyes to the right; recovery follows because many other movements for turning the eyes to the right remain; there is efficient, if not absolute, compensation."

Hemiplegia with lesion on the same side as the paralysis is in violation of accepted anatomico-physiological principles, and yet, as is well known, such cases are reported with comparative frequency. Various theories have been advanced by defendants of the opinion that anatomical variations do not exist. The most popular is that of "irritative inhibition," whatever the term may signify. Such theories are, as a rule, quite superfluous, in view of the fact, which has been repeatedly demonstrated, that imperfect decussation of fibres does occur, the larger number passing down direct instead of crossing. Two such cases, carefully studied, are recorded by Bidon, ⁴⁶_{Feb. 1, '94} of anomaly in the crossing of the anterior pyramids. In the first case the patient recovered almost completely in some weeks, consequently the diagnosis lacked confirmation by autopsy; but the author, after analyzing the symptoms, concluded that there was slight hæmorrhage in the motor portion of the left internal capsule, and that the number of fibres in this side of the pyramids crossing to the opposite side was only about 70 per cent., instead of 90 to 97 per cent.; while the number of direct fibres, or those going to the same (left) side of the body, was 30 per cent., instead of 10 or 3 per cent. The muscles of the two sides were affected in about this proportion. It was, then, a type of mixed crossing, intermediate between the normal and the reverse type.

In the second case, confirmed by autopsy, there was entire absence of crossing in the pyramids, and this corresponded with the clinical symptoms. Bidon says this anomaly is denied by some, which makes the case more interesting. It occurred in a man of 66 years, who, in the commencement of 1885, began to feel numbness in the left hand and arm, frontal headache, and vertigo. After some weeks there was an incomplete apoplectiform attack, after which marked and progressive weakness of left limbs, facial deviation, and aphasia appeared. In 1888 the patient was

first seen at the hospital, when he had incomplete left hemiplegia, with rigid contracture, lower extremity least affected, although its stiffness prevented locomotion; upper left extremity absolutely immobile. The left side of the face was also stiff, the left labial commissure drawn higher than the right, and the tongue possibly a little to the left, quite mobile. The right members were normal; also sensation and vision normal. There was complete motor aphasia, the patient comprehending spoken language, but being able only to say, with varying intonation, "ma, ma, ma." Writing could not be tested, as he was uneducated. The organic functions were healthy and the sphincters not affected except in the beginning. There was a slight, insufficient, aortic murmur, and the arteries were somewhat hard. The patient was observed about two months, during which time there was no appreciable change; he then contracted broncho-pneumonia on the hemiplegic side and died on the twelfth day. Autopsy showed nothing on the right side of brain. On the left side there was a large spot of ancient softening on the surface, starting from the lower border of the ascending branch of the fissure of Sylvius, proceeding parallel therewith half a centimetre forward, extending up to the inferior frontal fissure (between F2 and F3), almost reaching the most inferior and posterior portion of the second frontal convolution, following a bit the prefrontal fissure, then the inferior portion of the ascending frontal to the Rolandic fissure, descending on the ascending parietal (of which the anterior part was involved), a slight distance along the horizontal fissure of Sylvius, joining the point of departure. Flechsig and Pitres's combined incision showed softening of the full depth of the gray substance, extending some millimetres into the white substance without reaching the interior gray centres. The internal capsule and other portions of the brain seemed normal. The left peduncle was somewhat smaller than its symmetrical right and coursed by a longitudinal band of fibres grayer than the neighboring bundles, with an antero-posterior diameter of about two millimetres. It seemed to lose itself in the hemisphere above and the pons below. The anterior pyramid on the right side was normal. The same grayish bundle on the left side was again seen from the pons and extended down the cord on the same side, chiefly in the anterior pyramidal column (column of Turck), which was twice as large as ordinarily,

and a smaller, sclerosed tract in the left lateral pyramidal tract, much smaller than the usual size of this tract. There was no crossing in the pyramids at the medulla. The right side was normal throughout.

Mansell Moullin²_{Nov. 10, '93} reports a case of traumatic arachnoid hæmorrhage with paralysis on the same side as the lesion, but, unfortunately, without microscopical examination of the pons-medulla region and the pyramids. Two cases of hemiplegia with hemianæsthesia are reported by Jakob³¹⁹_{Aug. 26, '94} and Beevor.⁶_{May 6, '94} Other papers upon hemiplegia are by Blocq,¹⁰⁹⁰_{No. 2, '94} Brower,⁴⁵¹_{Oct., '93} and Leppman.⁴¹_{July 12, '94}

Bulbar Paralysis.—During the past year no less than fourteen separate papers upon this subject have come within the observation of the editors, most of these being clinical. The authors are: Fry⁸²_{July 14, '94}; Filatoff¹⁰⁰_{Sept. 4, '94}; Gowers¹⁰⁷⁷_{May 2, '94}; Bauduy³⁶⁴_{Jan. 1, '94}; Foges⁵⁷_{June 17, '94}; Goldflam¹⁰⁰⁵_{V. 4, No. 3}; Colman⁴⁷_{Spring, '94}; Wiener¹_{July 14, '94}; Verco²⁶⁷_{Apr. 16, '94}; Jellinek, Schlesinger, and Sternberg⁵⁷_{July 8, '94}; Pineles⁵⁸_{Mar. 31, '94}; and Londe.⁹²_{Mar. 10, '94} The last-mentioned writer presents a most exhaustive review of the special subtype of infantile and hereditary bulbar paralysis. From studies in this field, both clinical and pathological, he concludes: "1. There exists in the infant a bulbar paralysis, hereditary and familial. 2. It is characterized especially, from a symptomatic point of view, by participation of the superior facial in the paralysis. 3. Either the familial character or the participation of the superior facial may be absent in the infant. 4. Bulbar paralysis in the adult is seen connected with the familial (hereditary) character without participation of the superior facial, with complicating muscular atrophy, especially of the muscles of the neck. 5. Besides, there exists in adults bulbar paralysis characterized by participation of the superior facial without familial character. These paralysees form two groups, which may be complicated, the one with ptosis and also external ophthalmoplegia, the other with atrophy of the muscles of the neck. These two types find examples among infants. 6. These cases, among which one finds united paralysis of the superior facial and that of the levator palpebrum superioris without external ophthalmoplegia, may have as a cause a lesion, apparent or not apparent, of the common oculo-motor root, attributed by Mendel to the depressor and elevator of the eyelids. These cases of bulbar

paralysis, which confirm the hypothesis of Mendel, can be arranged under the name of medium polioencephalitis (*polioencephalite moyenne*).

Gowers presents very satisfactorily the salient clinical and pathological aspects of the disease. He recognizes five subtypes, including the pseudobulbar cases due to bilateral lesions in the two hemispheres. Toxic agencies are considered as highly-probable etiological factors in the acute inflammatory cases and also in all probability in the chronic forms, through a predisposition which they establish secondarily to degeneration. Wiener's case was that of a boy of 17, previously affected with cervical adenitis, in whom the paralysis was of the unilateral bulbar type,—quite infrequently observed. No local evidences of tuberculosis were found at the post-mortem, the ganglion-cells and fibres showing simple atrophy. From a study of the symptoms and pathological facts Wiener concludes that: 1. The region of the hypoglossal nucleus gives origin to nerve-fibres which supply the tongue, palate, pharynx, and larynx on one side of the body. 2. The column of nerve-fibres known as the respiratory bundle consists of fibres from the glosso-pharyngeal, vagus, and vago-accessorius nerves, and the lower and anterior portion of this column probably serves as the locality for the vagus and vago-accessorius fibres. 3. The glosso-pharyngeal nerve seems to control the reflexes of nausea and gagging in the soft palate and pharynx, and also to send some of the motor filaments to the pharyngeal muscles. These latter filaments have their origin in the hypoglossal nucleus, ascend in the respiratory column to the nucleus proper, and then make their exit with the glosso-pharyngeal nerve. 4. The soft-palate muscles are not innervated by fibres from the seventh nerve.

Pineles exhibited a patient, a female aged 25, who manifested many of the classical symptoms of disease of the bulb, but whose condition varied remarkably in severity from time to time, especially in a morning remission and evening exacerbation. Two similar cases previously observed by the author, both dying suddenly from dyspnoea, showed, post-mortem, no satisfactory lesions to explain the symptoms. Bauduy reports two cases, one of whom exhibited, as the only paralytic symptom, an inability to swallow. All other nerves and functions are said to have been normal,

which, in the absence of an autopsy, makes the accuracy of the diagnosis extremely problematical. The second case exhibited simply double facial paralysis without other nerve-symptoms, constituting the case not one of bulbar paralysis proper, but of double facial paralysis from probable circulatory lesion at the junction of the facial cross-path in the pons. Verco's case was one of acute bulbar paralysis of obscure etiology, but probably toxic, which is noteworthy chiefly from the fact that the patient recovered. The third, fourth, sixth, and ninth nerves were almost completely paralyzed; the seventh and twelfth less so; while the fifth, eighth, tenth, and eleventh were apparently not at all involved. Goldflam describes a type of bulbar disease of interest in this connection in that it has proven curable in three examples observed by him in young adults. The initial symptom was usually weakness of the muscles of mastication, followed by a bulbar-paralysis symptom-complex, with extremities participating. The affection develops rapidly, is characterized by frequent remissions and exacerbations, and gradually disappears,—usually within six months. These cases are believed to be of toxin origin. In discussing the cases of Jellinek, Schlesinger, and Sternberg, Bikels remarked that the spastic or convulsive laughing and crying observed in bulbar paralysis was much less intense and prolonged than in the same phenomena in hysteria. His further remark, that this cry and laugh did not occur in hemiplegia, was contradicted by Walker, who related such a case, and Sternberg stated that it might point to a variety of lesions of the cerebrum. Obersteiner concurred in this view, adding, however, that Oppenheim recognized a bulbar cry and laugh. Fry's case presented a classical symptom-picture of bulbar paralysis with diplegic weakness. The cases of Foges, Colman, and Filatoff were of the pseudobulbar type, the last mentioned reporting a case of this type in a boy who improved markedly under iodide. Colman's case was one of double hemiplegia with many of the symptoms of bulbar paralysis, but with unequal paralysis of extremities, absence of tongue-atrophy, and preservation of normal electrical reaction.

Hysterical Paralysis.—Several very suggestive cases have been recently reported of apoplecticiform attacks followed by hemiplegia, in which, from the presence of certain symptoms and the rapid recovery, it was concluded that the cases were hysterical.

Comby,¹⁴_{May 27, '94} for example, relates the case of a woman who, from lightning-shock, was rendered unconscious for four days, remaining hemiplegic for three weeks after consciousness returned. She had a second attack two years later during a storm, and a third three years later, also during a storm. Cure was always rapid. The fact that lightning can produce organic lesion, usually bulbar hæmorrhage with death or hemiplegia from lesion elsewhere, is well known, as was mentioned in the discussion of Comby's case by Gilles de la Tourette. This case seems to have been one of clearly functional arrest without any organic lesion; but several other cases reported as hysterical—notably one by Warriner,¹_{July 14, '94} another by Rendu,³_{Aug. 20, '94} and two others by Higier⁶⁸_{Aug. '94}—are quite evidently instances of mistaken diagnosis. Warriner's patient died in a second attack, which fact is sufficient refutation of the diagnosis. The cases of Higier and Rendu occurred in patients over 60 years, and the symptoms were much more probably due to arterio-sclerosis, evidences of which were present. Other cases in which the facts more clearly establish the diagnosis are by Bischoff,⁸⁴_{May 3, '94} Nason,¹_{July 28, '94} Sarles,⁸_{Sept. 20, '93} and Meyers,¹³⁰_{May, '94} the last writer reporting an example of brachial monoplegia of much interest. A diagnosis of hysteria as the cause of hemiplegia is not necessarily established by the fact of rapid recovery. In syphilis, in general paresis, and in other organic affections transient paralysis is a well-known symptom. On the other hand, many cases of grave organic disease may present symptoms for a considerable period highly suggestive of hysteria, but found eventually to have been dependent upon gross organic disease. I have seen brain-tumor attended with symptoms which were apparently classically diagnostic of hysteria, and Zenner⁵⁹_{July 28, '94} relates a case of acute softening dependent upon multiple obstruction of cerebral vessels in which, up to a short time before death, the symptoms were classically hysterical.

Miscellaneous Paralyses.—Four cases of brachial monoplegia—all of them due to trauma—are published by Wernicke,⁶_{Apr. 14, '94} Pennell,²_{Apr. 21, '94} Stocker,¹⁰⁷⁷_{Apr. 18, '94} and Thomas.²_{Feb. 29, '94} In Wernicke's case there was also right hemiplegia, slight left ptosis, and slight right facial paralysis. The symptoms were caused by a stab wound with a long knife in the left temporal region which, according to the author's diagnosis, injured the left crus cerebri where the optic tract lies close to it. In Pennell's case a notable symptom was

marked atrophy of the interossei and thenar and hypothenar of the hand affected, with glossiness of the skin and shooting pains in the arm. Bidon⁴⁶_{Dec. 1, '93} reports a case of cortical paralysis of the laryngeal nerves. The cases did not come to autopsy, but the larynx presented the picture described as typical of laryngeal paralysis due to cortical lesion by Raugé. The seat of the lesion was supposed to have been in the anterior part of the foot of the third frontal convolution. The author does not agree with Raugé that cortical paralysis is probably frequent, but overlooked on account of the double bilateral supply of muscles usually acting together by each of the cortical centres. Laryngoscopic examination should always be made in hemiplegics.

Dabney²²⁴_{July 28, '94} publishes notes of a case of paralysis of the muscles of deglutition occurring in a man affected with diabetes. A case of "associated paralysis of the right facial and pneumogastric" is published by Moore.¹⁶_{Apr. 9, '94} Alternate hemiplegia in a child $3\frac{1}{2}$ years old, supposed to have been due to tubercle in the pons, is the subject of a clinical paper by Larrien.¹¹³⁹_{July 8, '94}

LESIONS.

Hæmorrhage.—Herman Durck⁸⁶⁶_{June, '94} reports results of experimental studies made with a view to the determination of the age of hæmorrhagic extravasations in the brain, which may prove of importance from a medico-legal stand-point. Rabbits were the subjects of experiment. Hæmorrhage was artificially induced through a trephine-opening. The animals lived from one to seventy-two days. The seat of the hæmorrhage was examined microscopically, and certain changes in cellular metamorphosis, as well as in chemical character, were found to occur with marked constancy. The most marked changes were noted as corresponding to periods represented by the first, second, fifth, sixth, eighteenth, twentieth, and forty-fifth days. Hæmosiderin, a transition product in the metamorphosis of the blood-pigment, is the chemical medium through which the age of the hæmorrhagic extravasation may be approximated.

Under the title of "Hereditary Bilateral Cerebral Hemiplegia" Bernard⁷_{No. 26, '93} records the case of a man of 25, who had a bilateral cerebral hæmorrhage, whose father and one brother died of left hemiplegia at 58 and 28 years, respectively, and whose

sister died of apoplexy at 25 years. There was no history of syphilis. A case of mixed hæmorrhage and thrombosis secondary to mitral disease, in a child 7 years old, is recorded by Fox.⁶ Jan. 27, '94. A case of some interest in connection with the rather numerous deaths which have occurred recently among pugilists from "knock-out" blows in the ring is that⁹⁹ Mar. 1, '94 of a college-student, aged 19 years, tall and athletic in physique, who was struck, in a friendly boxing-bout, upon the left jaw, by a right-hand blow delivered straight from the shoulder. Large gloves were used. The victim, on being struck, commented in a natural manner upon the excellence of the blow, and asked which hand had delivered it. Immediately afterward he said he felt queer, put both hands to his head, jumped up and down several times, reached out his hands for the wall, and fell unconscious. The symptoms which subsequently developed led to a diagnosis of large hæmorrhage, the clot pressing upon the pyramidal tracts in the medulla, which was confirmed at the post-mortem. Death occurred on the sixth day. No external marks of violence were found, and the skull was free from evidences of fracture or injury, but the surface of the brain and the base of the cranial cavity were found covered with a large hæmorrhage, which filled the posterior fossa and extended into the vertebral canal. The lateral sinus (left) was found ruptured, and this was the site of the hæmorrhage. No pathological changes were present in the vessel-walls, and the heart and viscera were normal. The case served as a basis for comments by Walton, of Boston, upon the points of special interest. Other cases of traumatic cerebral hæmorrhage are recorded by Rasing³⁷³ No. 3, '93 and Littlewood,⁶ Feb. 17, '94 each of whom reports two cases. In all four the vessel ruptured was the middle meningeal. Both of Littlewood's cases were operated upon, but unsuccessfully. In one of Rasing's cases, a man aged 75, the operation resulted in perfect recovery.

Brower,¹ Sept. 23, '93 Eskridge,⁹ Sept. 30, '93 and Stowell¹⁵⁷ Oct., '93 write upon the general subject of cerebral hæmorrhage, especially as regards diagnosis and treatment. Clinical reports of hæmorrhage from the vessels of the pons-medulla region, with autopsies, have been published by Gouget,⁷ No. 6, '94 Regaud,²¹¹ Dec. 10, '93 and Déjardin.⁴⁵⁴ June, '94 The last-mentioned writer makes his case the basis for a representation of the anatomical and physiological points involved, commendable for its brevity and lucidity.

Embolism, Thrombosis, and Aneurism.—An analytical study of 104 cases of cerebral embolism occurring during the thirty-seven years of Virchow's *régime* in Berlin has been published by Saveliew.²⁰_{Jan. 10, '94} It represents an accumulation of facts and correlated observations, etiological, clinical, and pathological, the value of which it is difficult to overestimate. A partial abstract is as follows: Etiologically, heart disease was present in 89 per cent. of all the cases. In 39 the disease was of the mitral, in 17 aortic, and in 29 the two were conjointly affected. Fifty-four per cent. were females. The decade of life which included the largest number of cases was the fifth (40 to 50,—35 cases). The third decade ranked next (33 cases), the first (4) and seventh (6) being represented by the smallest number. The left hemisphere was most often affected,—left, 36; right, 29; bilateral in 39. The occluded artery was the Sylvian in 75 cases. From experiments upon dogs made with a view to the confirmation of facts observed in a study of these cases, Saveliew found that the shortest period at which softening appeared after the lodgment of the embolus was ten hours by microscopical examination and twenty-three hours by gross inspection. The area cut off is at first pale and ischæmic, then venous engorgement changes it to red, then to yellow, from fatty degeneration, and, finally, the soft patch becoming resolved, there is left either a scar or a cavity filled with fluid. The symptoms, of course, vary with the location and the degree of occlusion. The symptom-picture, aside from these factors, is, however, very inconstant, and there is not one which can be considered pathognomonic. The sex, the age at onset, the side of the brain affected, and the co-existence of heart disease or rheumatism or chorea are of value as indicating embolus. Two clinical examples of embolism occurring in children 9 years of age, both girls, are recorded by Variot¹²⁶_{July 16, '94} and Wicks.⁶_{Jan. 20, '94} In both there was pre-existing cardiac valvular disease, and the patient reported by Variot also suffered from chorea. Belzer¹⁸⁸_{July 22, '94} reports a case (female, aged 79 years) dependent upon rheumatic endocarditis. Two cases, reported by Eskridge⁹_{Jan. 6, '94} and Leidy,⁹_{Feb. 3, '94} of multiple thrombosis of the circle of Willis presented a symptom-picture which was remarkably similar,—a fact which was explained by the probable anatomico-pathological identity. In both cases the origin was attributed to syphilis. In both the symptom-picture

was that of a diplegia, and the mode of onset was quite similar. Leidy's patient survived the paralytic seizure only a few days, and at the necropsy the right middle cerebral and the basilar arteries were found to be occluded with thrombosis. A case presenting points of interest, but without autopsy, is related by Brown.⁶_{Dec. 9, '93} The symptoms clearly indicated a lesion located in the lower segment of the pons, but the character of the lesion was more obscure, though Gowers considered it probably thrombic. Fisher¹_{June 2, '94} writes upon the etiology and diagnosis of thrombosis of the cerebral arteries. A case diagnosed during life as one of epilepsy and hysteria, the symptoms having been due, as demonstrated at the necropsy, to a sacculated aneurism involving the anterior and middle cerebral, is reported by Jayle.⁷_{No. 20, '93} The patient, a man aged 41 years, gave a history of syphilis preceding attacks of epilepsy, which originated in 1882 and progressively increased in number and severity until death.

Traumatisms.—August Polis, of Liège,⁹¹_{Aug., '94} has written a thesis upon cerebral commotion, based chiefly upon experimental research, which should prove of value in assisting in the determination of some of the vexed questions of cerebral concussion and shock, especially from a medico-legal stand-point. He distinguishes between commotion and shock, the latter being, in his opinion, reflex action upon the brain and medulla; the former, direct irritation. In commotion two facts are to be considered,—first, the action of the violence upon the nervous centres; second, the vascular change produced by the effect of such violence upon the vessels. Where the latter is slight, great violence may do much less harm than a light blow under reverse circumstances. He finds, as is well known, that death may even ensue without any actual discoverable lesion.

Page,⁶_{Dec. 23, '93} in a clinical lecture upon cerebral concussion "so called," relates the case of a woman who suffered this accident and afterward developed acute mania. Cerebral compression is the subject of numerous papers, clinical and experimental. Among the many contributions, papers by Kocher,⁴_{May 28, '94} Deucher,⁴_{May 28, '94} and Albert and Schnitzler are worthy of special mention. The first author quoted takes a middle stand between Bergman and Adamkiewicz as to the theories of disturbed circulation and tension of the liquor cerebro-spinalis. Deucher found, experimentally, con-

trary to the view of Adamkiewicz, that symptoms may be induced by local pressure on the dura and consequent disturbance of the circulation. Schnitzler and Albert criticize both Bergman and Kocher,—a much less difficult undertaking than is the positive determination of either theory. Braquehaye¹⁴ publishes the results of experimental studies upon the subject of cerebral contusions, based upon registrations of shock by the graphic method. Antler⁶⁶³ writes upon the treatment of cerebro-spinal concussion by suggestion,—a most important factor as an agent for good. Among the very numerous writers reporting clinical examples of cerebral traumatism are: Kohl,²¹⁴ Dec., '93 Arcolia,² May 12, '94 Gaudoin,²³⁹ Oct. 1, '93 Osborn,⁶ Dec. 9, '93 Corning,²⁴² Feb., '94 Mayo,¹⁰⁵ Apr., '94 Sloan,³⁶ July, '94 Vignes,²⁴ Apr. 22, '94 Allen,² Dec. 23, '93 Davis,⁶ Nov. 25, '93 d'Antona,⁵⁹⁶ Oct., '93 Sommer,⁶⁸ Mar., '94 Herhold,² Aug. 4, '94 and Battle.² The two last-mentioned writers add, together, five cases to the records of traumatic cerebral hæmorrhage producing paralysis, successfully operated upon, with more or less complete recovery from all symptoms.

Encephalitis.—Under the title "Acute Superior Polioencephalitis Affecting the Cortex of the Left Frontal Convolution, the Left Centrum Ovale in Nearly its Entirety, and Part of the Right Centrum Ovale," Desplats²²⁰ Aug. 25, '94 gives the history of a fatal illness in a man, aged 18 years, whose symptoms are said to have developed suddenly with violent headache, intense fever, and vomiting, followed by delirium, stupor, coma, paralysis, and contractures. The fever suddenly left him and all the symptoms showed amelioration, but it suddenly returned a month later, and he died on the second day of its return and the thirty-ninth day from the beginning of the illness. At the necropsy lesions were found corresponding, according to the author's views, to the title of the paper as stated above. The lesions as described do not, however, exclude the existence of a meningoencephalitis such as might very readily have resulted from infection by metastasis, the patient having received a severe injury to his head previous to his illness, and also subsequently suffered from a sacral abscess. Noriega¹⁷⁹ Oct., '93 recognizes polioencephalitis (Strümpell) and describes a clinical example. The disease presents three periods symptomatically: the first with headache, vomiting, and hyperpyrexia and symptoms of cerebral irritation, general and local; the second is the period of exudation and pressure, with paralytic symptoms; while in the

third the symptoms point to cerebral dissolution, and is complicated with various trophic disturbances, hypostatic congestions, etc. Etiologically, he considers infectious maladies and alcohol of much importance. Samuel Wolf²⁴²_{Apr., '94} relates the history of a patient affected with an illness which, in the author's opinion, justifies the diagnosis of polioencephalitis superior acuta (Wernicke). The recovery of the patient marked a departure from the precedent in previous cases, which is noteworthy.

Lead Encephalopathy.—Stephen McKenzie²_{Dec. 2, '93} relates the history of a woman suffering from purposeless vomiting, intense cephalalgia, and double optic neuritis, due to lead poisoning acquired through occupation as a worker in a white-lead factory. The case did not correspond to either of the three more definitely classified types of saturnine encephalopathy,—the general parietic, the convulsive, or the maniacal,—but the diagnosis appears to have been none the less accurate. Ebstein²⁰_{v. 134, p. 3} records the case of a man, 43 years old, a lacquerer by trade, who died suddenly, and in whose brain both lead and copper were found in quite appreciable quantities. No cerebral symptoms were noted during life other than those due to an interstitial nephritis.

Hydrocephalus.—Heinz Kupfenberg¹²³_{Apr., '94} describes the case of a man of 48, whose symptoms indicated cerebral tumor, found, however, at the necropsy to have been due to hydrocephalus complicated by syringomyelia, the latter said to have been unattended by symptoms. Both lesions were considered as of congenital origin. Peterson²⁴²_{Jan., '94} exhibited before the New York Neurological Society a specimen illustrating a chronic hydrocephalus without a cerebrum, there being merely vestiges of the two hemispheres, although the cerebellum was normal. O'Carroll¹⁶_{Feb., '94} exhibited an hydrocephalic brain from a boy of 13, the hydrocephalus having been caused by an abnormally thick (4 millimetres) and imperforate inferior medullary velum.

Lesions of the Optic Thalamus.—Pick⁵⁷_{Oct. 8, '93} makes a diagnosis of lesion of the optic thalamus in two cases based upon the presence of homonymous hemianopsia and emotional volitional facial paralysis with hemiplegia. The cases did not come to autopsy, but the teaching of Nothnagel—"that in a focal lesion with hemiplegia and facial paralysis, volitional movements of the facial muscles being destroyed, but both sides of the face continuing to

act equally in psychical emotions, such as laughing and crying, it may be assumed that the optic thalamus and its connecting fibres are intact"—was considered conclusive as to the topical diagnosis. Mills ⁹⁹_{Nov. 2, '93} publishes notes of a case of lesion of this ganglion. Symptoms present: Hemiparesis and hemianæsthesia; loss of position-sense. Symptoms absent: Hemianopsia, athetosis, and special-sense involvement.

Lesions of the Cerebral Peduncles.—Leon d'Astros ⁹²_{Jan., Feb., '94} publishes an elaborate thesis upon the pathology of the cerebral peduncles, especially with regard to hæmorrhage, ischæmia, and softening. The symptom-pictures described by Benedikt, Gubler, Millard, and Webber are analytically discussed and their pathological significance is interpreted. The localization phenomena referable to this region are analyzed carefully, and the author concludes that "mesocephalic dysarthria" may be divided into two forms,—one arising from lesions in the anterior or motor regions, the other from lesions in the posterior region (cerebellum and superior part of the peduncles), the first causing paralysis of speech distinctively, the second inco-ordination.

Cerebellar Lesions.—Hæmorrhage of the cerebellar vessels, especially in children, is a comparatively rare lesion. Such a case, due presumably to trauma, is reported by Ratcliffe. ³²_{Mar., '94} The hæmorrhage occurred in the middle lobe, with death about four hours after the fall which induced it. A case, diagnosed as hæmorrhagic pachymeningitis, occurring in a subject of general paralysis, found at the autopsy to have been one of thrombosis of the inferior cerebellar artery, is recorded by Menzies. ⁴⁷_{Autumn, '93} The thrombosis was due to a general endarteritis secondary to syphilis. The pathological findings were in accord with the views of Léon d'Astros (see ANNUAL for 1894). A very important paper upon the degenerative changes secondary to a thrombosis of the left inferior cerebellar artery, by Campbell, is referred to under "Localization," while papers of much interest, by Marie and Roget and Collet, upon cerebellar sclerosis, are referred to under "Disseminated Sclerosis," in this article.

Miscellaneous Lesions.—A case described as one of general atrophy of the brain inducing symptoms of general paresis, in a girl 19 years old, is published by Hall. ²⁶⁷_{Jan. 15, '94} The pathological data upon which the diagnosis was made are rather meagre, con-

sidering the extreme infrequency of this lesion as a primary condition. The cerebral substance is said to have been "fine and hard throughout, and the brain could be thrown from hand to hand like a ball, without injury." Microscopical examination showed that "degeneration of cortical cells with overgrowth of neuroglia." Sclerosis of the brain occurring in a very old man who gave a history of syphilitic infection sixty years previous to death, and whose symptoms were epileptic attacks, mental changes, and defects of speech, is reported by Johnston.²⁸² The sclerosis was diffused throughout the cortex of both hemispheres. There were no focal lesions. The cerebellum was normal and the upper cervical cord, on section, showed no sclerosis. Cerebral anæmia, ischæmia of the brain, and cerebral œdema are the subjects of papers of more or less interest by Cleland,²³⁴ French,⁵³ and Preston.²⁴²

TUMORS.

Hydatid Cysts.—The difficulties attending a diagnosis *intra vitam* of hydatid cyst of the brain are well known and often insurmountable. It is seldom, however, that a case so misleading in the apparent significance of the conditions present is observed as that reported by McPherson.⁵⁵⁷ The patient, aged 22 years, was admitted to the hospital suffering from severe headaches, listlessness, an apathy of manner, with marked pallor and a pulse of 100, but with a normal temperature. He was and had been for three years completely paralyzed on the right side. The previous history was that at the age of 12 years he had received a violent blow on the head, followed one year later by epileptic fits, which had continued ever since, averaging one a month for seven years. After the paralytic strokes the fits became much less frequent, but for two years he had suffered much from headaches. The case was supposed to be one originating in cerebral trauma and an operation was decided upon, but prevented by the sudden death of the patient. At the autopsy the left cerebral hemisphere was found occupied, in the whole interior of its upper and posterior part, by a large hydatid cyst, from which 20 ounces (625 cubic centimetres) of fluid escaped, along with several daughter-cysts and shreds of membrane. The occipital lobe was chiefly destroyed. No mention is made of any evidences of the supposed trauma.

Landowski⁷_{No. 20, '93} exhibited the brain of a man, aged 32, who entered the Hôtel-Dieu with gastric disorders. There was extreme lassitude and tenderness over the abdomen, and a diagnosis of alcoholism was made. Subsequently, however, the temperature rose to 39° C. (102.2° F.), post-cervical rigidity developed, and the man died in coma. Autopsy showed five cysts containing cysticerci, three in the right and two in the left hemisphere, which had led to a meningitis causing death. J. Allison Hawkes²⁸⁵_{Apr. 15, '94} made a correct ante-mortem diagnosis of probable hydatid tumor of the brain in a boy of 7 years, who began to suffer from attacks of vomiting six months previous to death; he became mentally dull and listless, tired easily, and complained of pain over right frontal region. There was a history of one convulsion which was followed by an unsteadiness of gait and slight right ptosis. Upon examination vision was found obscure in the right eye, the pupil of which was fixed, the fundus showing beginning optic neuritis. There was also diplopia, ptosis, and internal strabismus, but no other cranial nerves seemed to be involved. All the limbs were affected with a general paresis, and the gait was unsteady, with a tendency to walk to the right. Lungs, heart, liver, and kidneys normal. While under observation the boy had an attack of unconsciousness, with temperature of 102.5° F. (39.2°C.), complete flaccidity of limbs, and general sensation totally abolished. He remained in this condition thirty hours, after which he gradually recovered consciousness. Later he developed complete amaurosis, total loss of sense of smell, impairment of taste, and was unable to stand alone. When erect his head inclined forward and toward the right shoulder. It was noticed that the pupils were widely dilated when the child was awake, while they were contracted during sleep. Two weeks before death an occasional transient left facial paralysis was noticed, and ten days later the left arm was similarly affected. A diagnosis of tumor in the right cerebral hemisphere and involving the right cerebellum was made. On account of the slight and varying focal symptoms and the generalized paresis the tumor was believed to be probably hydatid, since fluid pressure would most easily explain the symptoms. The child, unfortunately, died before the operation contemplated could be done, and at the autopsy a large hydatid cyst was found in the right hemisphere, extending from the cuneate lobe to the fissure of Rolando.

Atrophy of the muscles with reaction of degeneration to the galvanic current was observed by Clarke ⁴⁷ _{Autumn, '93} in a case of hemiplegia caused by a large hydatid cyst occupying the posterior part of the left cerebral hemisphere. The spinal cord was, fortunately, examined carefully also, and an atrophy of several of the giant-cells of the anterior horn was observed, many having disappeared, while others were granular and swollen, and still others deeply pigmented. Transmitted irritation through the fibres of the pyramidal tract, which were found in a state of well-marked degeneration with nerve-fibres extensively destroyed, is supposed to have induced the disease of the motor cells. The cerebral cysts in this case were multiple, and this, with a history of syphilis six years previously, served to render diagnosis difficult, if not impossible.

Tumors of the Cortex.—A very interesting case which illustrates the possibility of the presence of a tumor of large size and in an active brain-area, without characteristic symptoms, is recorded by Pel. ⁴ _{No. 5, '94}. The symptoms observed were paræsthesia, followed gradually by paralysis and slight atrophy of the right hand and forearm and right leg, with impaired intelligence, change in disposition, and Jacksonian epilepsy. The duration of symptoms covered a period of one year, and, while strongly suggestive of tumor, the absence of headache, vertigo, vomiting, and optic neuritis necessarily left an element of doubt. All other treatment failing, it was decided to trephine over the left motor area for the arm, and at this point a large tumor, with a circumference of sixteen centimetres, was found. The tumor, which was an encapsulated cystic fibroma, was easily removed, but the patient died. It is difficult to explain, in the light of our present knowledge, why so large a growth in such a location should have been unattended with the more constant and characteristic symptoms of such growths; nor does the fact that similar cases have been recorded assist us in reaching an explanation.

Donnadien ¹⁸⁸ _{Feb. 11, '94} exhibited a specimen tumor from a case which, he said, would, apparently, have been an ideal one for operation. The patient, unfortunately, died soon after admission to the hospital, and before a full examination could be made. So far as known, her only symptom had been a monoplegia of the right arm, present three months. At the autopsy a tumor the size of a small

orange was found attached to the dura, at about the middle portion of the fissure of Rolando, on the left side. It compressed the brain-substance, but was independent of it and easily enucleable. Wyeth¹⁰¹_{Nov., '94} gives brief notes of a case of cystic tumor of the right upper motor area (leg-centre) correctly diagnosed by Sachs and operated upon successfully by himself. Audéoud¹⁹⁷_{Dec. 20, '93} operated upon a man, aged 46, for a suspected tumor of the right paracentral lobule, the localizing symptom being epileptiform attacks commencing in the left foot. The trephine-opening was made outward from the median line to avoid the longitudinal sinus. No tumor was found at the time, but the patient improved temporarily, dying later, however, with symptoms of pulmonary tuberculosis and localized meningitis, also presumably tubercular. The autopsy showed a tubercular meningitis at the convolution of Broca, and the inferior ascending frontal, indicated before death by aphasia and right facial paralysis, and also a tubercular tumor of the right paracentral lobule. A case illustrating the superior topical diagnostic value of early symptoms, as compared with those occurring later, when pressure may generalize all symptoms, is reported by Foxwell.³²_{Dec., '93} The patient, a woman 26 years old, was knocked down when a child, aged 10, by a blow over the upper left parietal region. No symptoms were observed until the age of 21, when a fit occurred, beginning as a cramp in the left leg. Similar attacks following about once a month for two years, finally resulting in left hemiparesis. This having increased, a year later she became weak on the right side and vision began to fail. Toward the last, double optic neuritis, double ptosis, double facial paralysis, and paralysis in all four limbs—greatest on the left, however—had developed. The advisability of operating was considered, but the symptoms were looked upon as not indicating with sufficient certainty the location, and the intention was abandoned. At the autopsy a tumor the size of a hen's egg was found occupying the right motor area, its centre involving the ascending frontal. It did not extend deeply into the subcortical white matter, and could have been apparently quite easily removed had due weight been given to the early topical symptoms. Campbell¹⁸⁷_{Jan., '94} exhibited specimens illustrating that rather rare variety of vascular tumor designated by Billroth as cylindroma. An interesting symptom observed was great pain, corresponding in distribution to the hemi-

plegia. Nammack⁵⁹_{May 12, '94} describes a case of tumor treated medically with large doses of iodide of potassium, with the result that for several months the patient was so decidedly relieved of all symptoms as to be able to attend to business. The choked discs remained, however, and without apparent cause the symptoms a few months later re-appeared and, progressing quite rapidly, caused death in coma. At the autopsy a sarcomatous tumor was found in a situation corresponding to the symptoms (lower third of ascending frontal and posterior third of third left frontal, right facial spasm and paralysis, and some aphasia) and confirmatory of the topical diagnosis made by Starr. James Taylor⁶_{Jan. 20, '94} relates a somewhat similar experience, with the difference, however, that his patient, who presented left-sided weakness and convulsions, headache, vomiting, and double optic neuritis, not only recovered from all symptoms under iodide of potash, but has remained well for four years since, the optic neuritis disappearing with the other symptoms. Taylor also reports a case of tumor of the right upper motor area, successfully operated upon by Horsley, with recovery from the paralysis and optic neuritis. The localizing symptoms were fits, beginning in the left leg, with subsequent gradually-developing paralysis of the left side. Diller¹¹²_{Aug., '94} contributes a paper upon "The Non-Operative Treatment of Brain-Tumor," which is rather misleading in its title, since the trend of the author's argument is in the direction of no treatment at all. While we admit his argument that operative interference in cases of cerebral tumor has proven no specific, and is a procedure of limited application, it is none the less true that it is practically the only resource, and in proper cases should never be disregarded. French,⁸⁵_{Dec., '93} Mura-wien,²_{Nov. 18, '93} Sweeney,¹⁰⁵_{Aug., '94} Lafarelle,¹⁸⁸_{Nov. 22, '93} and Pacetti⁵⁸⁹_{Feb. 19, '94} have contributed clinical and didactic papers, of more or less interest, upon the subject.

Tumors of Frontal Lobe.—A case of primary sarcoma of the arachnoid involving the right frontal lobe, and of much interest from a pathological stand-point, is recorded by Reymond.⁷_{No. 26, '93}⁵_{May, '94} The symptoms were general weakness and helplessness, but no true paralysis, headache, amaurosis, and busy psychical delirium without physical restlessness. The absence of focal motor paralysis in cases presenting the general tumor-symptoms of headache, vomiting, and optic neuritis, with associated mental changes in the

form of either dementia or mild mania, is of the greatest localizing value in tumors of this region. Raymond,⁹⁴_{Oct., '93} in another case found intense ataxia of the so-called cerebellar type which Bruns has stated to be very common in tumors of this locality. The patient presented no form of paralysis, but gave a history of violent cephalalgia, with epileptiform crises and rapid dementia, dying in coma. The tumor was found in the left frontal lobe, anteriorly, and on the internal surface. Zimmerman¹¹²_{May, '94} gives in detail the history of a patient whose symptoms—severe frontal headache, slight mental changes and defects of motor speech, attacks of *petit mal*, gradual loss of vision, late vomiting, and choked disc—led to a diagnosis of tumor of the frontal lobe, confirmed at the autopsy by the presence of an infiltrating myxosarcoma of the right frontal lobe, bulging on the median surface and pressing upon the median surface of the left frontal lobe. As the author states, this case illustrates quite emphatically the importance of the ophthalmoscope in obscure cerebral cases, as without its use the diagnosis in this case would have been impossible. A graphic illustration of the accuracy of present teaching as regards cerebral localization is afforded by a case recorded by Adami.²⁸²_{Dec., '93} The patient was phthisical and addicted to morphine. For two days before death she suffered from attacks of an epileptic nature in which there were convulsive movements of the left shoulder and neck; so that the head became pulled down to the left and the face turned to that side. As many as one hundred and forty-five of these contractions were recorded in a minute. At the autopsy, at a point corresponding to the junction of the superior and middle frontal convolutions bordering on the ascending frontal, there was an area of localized tubercular disease half an inch in diameter. A small fibrous tumor of the orbital convolution of the right frontal lobe led to paraplegia in a woman of 65 years, a patient of Villecourt.⁷_{No. 19, '93} Other cases of tumor of the frontal lobe of interest are reported by Campbell¹⁸⁷_{Jan., '94} and Neff.²⁷⁸_{Apr., '94}

Tumors of Occipital Lobe.—A case possessing several features of interest is reported by Caton.¹⁸⁷_{July, '94} A man aged 36 years, with a history of syphilis, complained of severe frontal headache and impaired vision. Double optic neuritis and optic spectra in the form of colored rings were present, but, in the early stages, no

hemipia. The only other cranial nerve-defect was deafness of left ear. There was some vertigo at first, and memory was poor. The headache and visual and auditory defects increased, and for about twelve hours, upon one occasion, he suffered from acute myopia. A semicomatose condition eventually developed, accompanied by deviation of eyes to right and left hemiplegia with loss of left plantar and patellar reflexes. A diagnosis was made of tumor of the right occipital lobe; but at the necropsy the right lobe was found normal, while the left was occupied by a large syphiloma pressing upon and displacing the left crus. The exact anatomical location of the neoplasm is not stated, nor does the reporter state that hemianopsia was noted at all. In the subsequent discussion by Dickinson, Gotch, Thomas, and Bradshaw, the theory of "irritative inhibition," as explaining the left hemiplegia, seems to have been most acceptable. The case illustrates, as was pointed out by Thomas, the relatively greater value of early symptoms for topical diagnosis as compared with the later symptoms. The point of special interest in the case, however, lies in the fact that "treatment by iodide and mercury had no effect,"—a fact easily explained if the prevalent method of giving the iodide in miserably inadequate doses were true in this case. Palisadow ²¹_{June 30, '94} mentions the case of a soldier, 26 years old, who exhibited, as symptoms, severe headache, total blindness in both eyes, wide pupils, with slight reaction to light, and marked cachexia, dying after a brief illness. Autopsy showed a tumor, of a nature not mentioned, growing from the meninges over the occipital region, causing a deep destruction of the right occipital lobe and some softening of the upper surface of the cerebellum. McKernan ¹⁶¹_{Oct., '93} relates the history of a man whose symptoms were severe headaches, weakness of the left leg, neuroretinitis, and left homonymous hemianopsia, due, as determined by autopsy, to a glioma, weighing four ounces, situated in the right occipital lobe, extending forward slightly into the parietal and involving somewhat the subcortical white fibres. It is to be regretted that a correct topical diagnosis, which it would appear should not have been difficult, was not made, as the case was one offering excellent results from operative interference.

Tumors of the Centrum Ovale.—Eskridge ⁹_{Mar. 10, '94} exhibited, as the subject of a clinical lecture, a man suffering from paralysis of

left side, of sudden onset, which, with associated semiconsciousness, stertorous breathing, and pulse of 64, suggested quite strongly some vascular lesion. A previous history, however, of headaches and some mental confusion and general malaise, together with double optic neuritis, pointed to tumor,—a diagnosis which was confirmed at the autopsy,—the growth being a broken-down syphiloma occupying the region of the centrum ovale of the right side. Graham⁸⁹_{July, '94} presented the brain of a man who, four months before death, having been previously well, received a severe blow on the right side of the head, followed some weeks later by a mixed aphasia of both amnesic and ataxic types, paralysis of right face and right arm, but with no involvement of the leg and without convulsions. The temperature suddenly rose; he became delirious, then comatose, and died. A diagnosis was made of hæmorrhage from *contrecoup*,—a most remarkable diagnosis, in view of the fact that the symptoms developed gradually and that the injury had been received four months before death. At the autopsy a glioma was found in the anterior portion of the left centrum ovale, affecting the anterior limb and “germ” (genu?) of the internal capsule. A depression of the outer plate corresponding to the injury was found on the right side. No ophthalmoscopic examination was made, apparently,—an omission which probably prevented a correct diagnosis and which possibly might have led to successful surgical treatment, as the tumor was quite accessible.

Peterson²⁴²_{Jan., '94} made a diagnosis of tumor of the basal ganglia, so situated as to involve the posterior limb of the right internal capsule, in a man aged 50, with the following symptoms: History of headaches and vertigo, followed by a convulsion occurring suddenly and attended with unconsciousness for ten hours. Four weeks later other convulsions, and, on examination, left hemiparesis and hemianæsthesia, left hemianopsia, tendency to somnolence, occasional delirium, great frontal headache, pulse 52 to 60, and slight optic neuritis. A gliosarcoma was found at the autopsy, occupying the region of the basal ganglia, especially posteriorly, and projecting into the right lateral ventricle. A second small tumor was found attached to the dura mater on the right, compressing the angular gyrus. Bauduy⁸²_{June 9, '94} and Walton⁹⁹_{Nov. 2, '93} also record clinical examples of tumors involving this region. In

Bauduy's case there were two tumors,—or, rather, a small glioma in the first right frontal convolution and a large cystic collection of serum in the region of the ascending frontal and longitudinal fissure. The symptoms were referable to both lesions, but chiefly to the area damaged by the cyst. The case appears to have been one favorable for operation, though such a procedure was not apparently considered.

Tumors of the Pituitary Body.—Andriezen ^{Jan. 13, '94} publishes the results of extended studies, chiefly morphological and experimental, tending to show that this gland possesses an essentially-trophic influence upon the central nervous system. Lesion of this gland, resulting in destruction or impairment of function, should manifest itself, he believes, in a certain constant group of symptoms, chiefly as follows: (1) depression and apathy; (2) general muscular weakness; (3) loss of fine co-ordination and equilibration; (4) generalized twitchings and spasms of the muscles; (5) subnormal temperature; (6) wasting of the body-tissues; (7) attacks of dyspnœa; and (8) rapid progress toward death. This theory of a trophic influence is not original, of course, Marie and others having elaborated it in connection with an assumed relationship between lesions of this gland and acromegaly, but the author's conclusions as to a diagnostic significance of the symptom-group mentioned meets with clinical confirmation in a case reported by Woolcombe, ^{June 23, '94} all the symptoms except dyspnœa and muscular twitchings having been present. That subnormal temperature is not constantly present in lesions of this gland is apparently demonstrated in a case reported by Reymond, ^{Nos. 20, 26, '93} in which the temperature ranged from 38° to 40° C. (100.4° to 104° F.). This patient was, however, under observation only six or eight days, and at the autopsy, in addition to the tumor of the pituitary gland, there was found a recent hæmorrhage, which renders conclusions valueless upon this point. Langer ^{868 Sept. 30, '93} makes some interesting observations based upon microscopical studies of two cases of cystic formations in the region of the infundibulum and adherent to the pituitary body.

Tumor of Corpora Quadrigemina.—A case of tumor in this region is described in a boy, 4 years old, who, four months before admission to the hospital, became ill, would not eat, and had double ptosis. He gradually lost strength, and three months

after the ptosis appeared he developed quite decided ataxia of locomotion, and of the upper limbs two weeks later. On admission he seemed drowsy, spoke slowly, presented complete double external ophthalmoplegia, lateral nystagmus, and blindness, but no optic neuritis or choroiditis. He died two months after admission, or six months after the first symptoms. Autopsy showed the corpora quadrigemina gray and gelatinous in appearance, the result of gliosarcomatous infiltration. The cerebellum was perfectly healthy, but the crura cerebri were also diseased. Taylor, who reports the case, ²_{Nov. 18, '93} considers it an excellent illustration of the diagnostic teachings of Nothnagel with regard to tumors in this locality. That Nothnagel's dictum is not beyond criticism, however, is attested by Bruns, ⁷⁵_{No. 1, '94} who thinks that ataxia preceding the ophthalmoplegia indicates cerebellar disease, while a reversal in this order of appearance points to disease of the corpora quadrigemina. The cases quoted by Bruns in support of his belief are referred to more fully under the paragraph on "Cerebellar Tumors," next page.

Tumor of Pons.—A very carefully recorded and instructive case of tumor of the pons and left crus is published ⁴⁷_{Summer, '94} by Sharkey. A sailor, 43 years old, had, three years previous to his illness, fallen from a height of twenty-eight feet, breaking a leg, but apparently not injuring the skull or brain. The symptoms of special interest were the profuse perspiration, which marked the onset and then disappeared, and the marked mental changes and impairment of psychical speech, due to the cutting off of the sensory connection of the left cerebral hemisphere, as shown by the autopsy, which revealed a tumor occupying the region of the corpora quadrigemina and aqueduct of Sylvius, growing from the left half of the pons and left crus. The left posterior internal capsule, optic thalamus, and part of the extra-ventricular nucleus of the corpus striatum were obliterated. Broca's convolution was normal upon section. Brissaud ⁷³_{Jan. 20, '94} discussed a case in which he had diagnosed a tumor involving the restiform body, subsequently confirmed by autopsy.

A case presenting the symptoms of severe paroxysmal headaches for several months, vomiting, Jacksonian spasm,—limited to left arm and hand,—vertigo and paraplegia, with deafness of left side and double optic neuritis, was diagnosed by Orr ³⁶_{Jan., '94} as tumor

of the right motor area. A trephined opening showed, however, a normal condition in the right hemisphere, but at the autopsy a tumor the size of a walnut was found growing from the meninges apparently over the auditory meatus and pressing upon the pons and medulla. The left sixth nerve was incorporated with it, but the other cranial nerves were not involved. No mention is made of symptoms referable to the sixth-nerve involvement during life. A case of tumor located in the pons medulla flocculus triangle is reported by Newton,²⁴²_{Jan., '94} who comments upon the anatomical predisposition of this region to morbid growths by reason of the circulatory peculiarities and the relations to the foramen of Magendie, through which the entire communication of the sub-arachnoid spaces of the spinal cord below with the ventricles of the brain above is established. Jolly⁴¹_{June 4, '94} relates the symptoms and post-mortem findings of a case of glioma of the fourth ventricle extending over the medulla, with symptoms which were more or less characteristic, though the patient never exhibited any ataxia. With regard to the centre for "*Blicklähmung*" which was present in this case, the author says the case points definitely to the fact that this centre lies somewhere in the affected portion of the medulla. Prautois and Etienne⁹⁴_{Apr., '94} observed a case of primary sarcoma of all the ventricles of the cerebrum, causing death, with general symptoms of tumor, in a girl 12 years old. Usually, as they state, only one ventricle is affected.

Cerebellar Tumors.—Bruns⁷⁵_{No. 1, '94} places upon record two cases illustrating the difficulties attending the differential diagnosis between lesions of the cerebellum and the corpora quadrigemina. Case 1. That of a child about 3 years old, who had measles followed by otitis at the age of 9 months. Fourteen months later left ptosis was noticed. During the next few weeks the opposite levator and both internal recti became paralyzed, and eventually all other muscles supplied by the third nerve became involved. Intention tremor developed in the upper limbs, static ataxy and scanning speech occurring later, followed by vomiting, optic neuritis, pyrexia, and death. Upon these symptoms a diagnosis of lesion of the corpora quadrigemina was made and confirmed at the autopsy. Case 2. A boy, aged 9 years, whose symptoms began with headache, vomiting, and ataxy. Three months later he exhibited paralysis of right external rectus, paralysis of left,

and bilateral ptosis. Ataxia was very decided. The ophthalmoplegia became eventually complete in the right eye. The diagnosis of a cerebellar tumor was also confirmed by the necropsy. The author remarks that, while the first case was confirmatory of Nothnagel's teaching, that the combination of ataxia and incomplete ophthalmoplegia was diagnostic of quadrigeminal lesion, the second case was directly contradictory. Bruns suggests that the order of precedence of onset of the ataxia or the ophthalmoplegia might prove of value, the former in indicating cerebellar lesion and the latter suggesting quadrigeminal disease.

Ashby¹⁵_{Dec., '93} regards the diagnosis as comparatively easy, and comments upon the striking constancy with which the same symptom-picture presents itself, especially in children. He expresses himself as skeptical of the existence of a special cerebellar ataxia, —an opinion in which I concur; but his experience with regard to the tendency to fall in certain directions according to the location of the tumor, which he states he has never seen, is certainly not that of most observers. The symptoms seen in tumors in this locality are due, he believes, not to partial destruction of the cerebellum, but to gradually-increasing dropsy of the ventricles, or, in other words, to the hydrocephalus,—a view absolutely untenable, since cerebellar tumor is not infrequently found to have produced very slight ventricular effusion; and *per contra* the symptom-picture in hydrocephalus in most instances lacks several of the more constant and striking features characteristic of cerebellar tumor. Léon d'Astros¹¹⁸_{May, '94} reports three clinical examples of this affection occurring in children. He emphasizes the fact that hydrocephalus occurs much more frequently in children with cerebellar tumor than in adults, constituting, in fact, the most conspicuous difference in the symptoms at the two periods of life. The mental symptoms and paraplegia he attributes to the hydrocephalus; but the choked discs may be the result of infectious processes secondary to the new growth and acting within the nerve-sheath. This he believes to be especially probable in tubercular tumors in which optic neuritis occurs quite early. Two of his cases were of this character, and their duration was much shorter (seven months) than the third case, which was one of glioma, with symptoms present eighteen months before death.

Hughlings-Jackson and Russell²_{Feb. 24, '94} record a case of cyst of

the cerebellum in a man, aged 30 years, who presented, among other symptoms, decided paresis of the muscles of the trunk and back, due directly to structural damage of the cerebellum. The presence of this form of paralysis is quite often overlooked, although it was pointed out as a clinical fact by Niemeyer more than twenty years ago, and has since been repeatedly insisted upon by Jackson, whose clinical observations have been confirmed experimentally. The case reported by Jackson and Russell is of much interest in several additional respects, but particularly in connection with the unusual mode of death by failure of respiration, which ceased absolutely for more than eight hours before the heart stopped beating. This failure of respiration was difficult to explain, since the theory of pressure upon the medulla does not seem tenable in view of the fact that the cardiac action was apparently not at all involved. A very similar case of respiratory failure in cerebellar tumor, which did not, however, induce death, is reported by Atkins.² Mar. 31, '94 The patient, a man aged 42 years, was admitted to the Birmingham Infirmary suffering from cerebellar tumor, as confirmed subsequently by autopsy. Shortly after his admission he was found in a state of profound coma, and in a few minutes he ceased to breathe, but his heart still continued to beat (pulse 140). Artificial respiration was practiced for three hours and one-fourth, when he began to breathe naturally again and in a few days was as well as before, although death occurred eight weeks later from asthenia. Still another instance of inequality in the degree to which the functions of respiration and circulation may be affected in cerebellar tumor is recorded by Jallaud,⁶ Mar. 17, '94 though in his patient respiration ceased for only a few minutes before the heart's action. Another symptomatic condition—very common, of much interest, but seldom looked for and less often reported—is glycosuria. No mention is made of any urinalysis in most of the cases reported during the year; but in four cases in which tests were applied by Krause,⁶¹ Sept. 30, '93 Angell,¹⁷⁰ Apr., '94 Wegge,⁶¹ Mar. 31, '94 and Sutherland,⁵¹ July, '94 all except the last mentioned found sugar in greater or less abundance. Sutherland's case demands more than passing notice, since it is placed on record as one of "complete recovery" of cerebellar tumor. The symptoms apparently justified the diagnosis. The patient, a boy 3½ years old, was admitted to the hospital for treatment for headaches and

partial blindness. The ophthalmoscope showed choked discs. There was a history of a fall six months previously. The family history was good. Following the headaches and optic neuritis he gradually lost strength, became listless, and developed a staggering gait, with exaggerated knee-jerks, horizontal nystagmus, and tremors of the hands. Later he developed vomiting of the cerebral type, which was quite frequent, free epistaxis, and strabismus. These symptoms continued several weeks, when he rather suddenly improved and progressed steadily to a perfect recovery, with return to normal of both discs and disappearance of all symptoms of tumor. It is possible that the lesion may have been, as the author suggests, a tubercular deposit (there was cervical glandular swelling) which was arrested in development and subsequently absorbed; but it seems more probable that the tumor, if tumor it was, was of a cystic nature and was absorbed as in the cases reported by Williamson (see ANNUAL for 1893). Angell's case was of interest as one of double lesion, the patient having suffered from an infantile hemiplegia, with resulting porencephaly, several years before the cerebellar tumor which caused death appeared. Vignal²⁴³_{May, '94} writes upon the symptomatology of cerebellar tumors and reports a case. Similar papers, with clinical reports of cases, are contributed by Bruckner³⁶⁶_{Aug., '94} and Eskridge.⁴⁵¹_{Nov., '93} Neff²⁷⁸_{Apr., '94} relates the history of a patient admitted to the Michigan Insane Asylum, suffering from dementia, to which were superadded later symptoms indicating brain-tumor. The topical diagnosis was not so clear as indicated by the symptoms, but the character of the new growth—fibrosarcoma—was suggested by the appearance, on various portions of the body, of small fibromatous tumors.

ABSCCESS.

McEwen,⁵⁹_{May 5, '94} in a paper based upon a large personal experience with pyogenic diseases of the brain, formulated the following conclusions: "1. All abscesses of the brain are formed secondarily to a primary focus of infectious disease located elsewhere. 2. The chief infectious foci are formed in connection with middle-ear disease. 3. Abscesses of the brain coming from this source are generally in direct contact with the seat of the middle-ear disease. 4. Such abscesses are usually reached most easily through the mastoid antrum. 5. The latter is best reached by an incision

through the supramental triangle, by which means the whole tegmen antri and tegmen tympani may be exposed. 6. The whole infectious tract must be removed, after which the skull should be trephined over the temporo-sphenoidal lobe of the brain." The plan suggested—of trephining, as a matter of routine, over the temporo-sphenoidal lobe—is probably a wise one, in view of the statistical frequency with which this region is involved, on the one hand, and because of the frequency with which cases are observed which do not present localizing symptoms at all. An example of the degree to which the anomalous and erratic in the symptom-picture may be present occasionally in cerebral abscess is afforded by a case recorded by Drummond.⁶ July 23, '94. The patient, a girl 9 years old, had presented a purulent discharge from the right ear for several years, when she rather suddenly developed headaches, vomiting, right-sided convulsions, and paralysis of the right arm, which gradually passed into a right hemiplegia. She became aphemic later, and optic neuritis was present. There was no apparent discharge from either ear, but cotton introduced into the right meatus was quickly moistened with purulent fluid. Following the physiological guide,—right-sided convulsions and right hemiplegia,—a trephine-opening was made over the left temporo-sphenoidal lobe, but nothing was found. A second opening was made over the arm-centre and a third over the left lobe of the cerebellum, but with equally negative results. The operations produced temporary alleviation of symptoms, however, and the child lived for a week. At the autopsy nothing was found in the left hemisphere except the evidences of operation; but in the right lobe of the cerebellum, near the surface and about three-fourths inch from the medulla, an abscess-cavity, holding about an ounce (31 grammes) of pus, was found. Most careful and extended search failed to reveal any lesion of the left hemisphere, although both tympanic cavities were found extensively diseased. Drummond could find no satisfactory explanation for the symptoms in this case, being convinced that he had not overlooked any obscure lesion of the left hemisphere and not being satisfied with a theoretical explanation of a reflex origin. Pressure upon the fibres of the medulla would not explain the one-sided convulsions, nor would it explain the facial paralysis, since whatever pressure existed was considerably below the cross-path of the facial.

A case of multiple cerebral abscess, the separate pus-cavities numbering as many as half a dozen or more and variously located in white and gray matter, is reported by Finley and Adami.²⁸²
 The origin of the pus was in a suppurating bronchial gland, secondary to pneumonia,—a source of cerebral abscess in not a few cases, as is attested by statistics bearing upon this point collated by Williamson.⁹⁰
 A rather uncommon medium of purulent brain-infection is recorded by Oldright,³⁹ whose patient died from general pyæmic infection of the cerebrum secondary to deep-seated abscess of the neck involving the ramus of the jaw. The chief avenue of communication seems to have been through the vessels passing to the cavernous sinus. Koch,⁴ records two cases of cerebral abscess secondary to otitis, both of which were operated upon, but unsuccessfully, because of the impossibility of locating the site of pus. A very interesting and instructive clinical lecture upon pus-accumulations in the brain, more especially suppuration in the sulcus lateralis, is published by Barker.¹⁰⁷⁷
 Campbell,⁹⁰ reports having found Charcot and Leyden crystals in pus from cerebral abscess. These crystals have been found in the expectoration of asthmatics, the fæces of anæmics, from the anchylostomum duodenale, in the semen, in bone-marrow, and in other conditions. So far, they seem to have no constant significance.

EPILEPSY.

General Considerations.—Although the literature of epilepsy for the past twelve months is extraordinarily voluminous, I have been able to find but few observations possessing novelty or much additional value. The clinical facts observed have been chiefly confirmatory of previous observations. Our knowledge of the pathology involved has not been materially enhanced, and the year reflects no radical advancement in therapeutics. Two or three well-written reviews have appeared, by Seeligmüller,⁶⁹ of Halle; Wildermuth,¹⁸³; and Gélineau.¹⁵³
 The importance and possibility of early diagnosis is considered by Seguin,²⁴ who especially emphasizes the importance of recognizing masked forms manifesting themselves in psychical equivalents and forms associated with hysteria. The author's familiarity with his subject and the terseness and clearness of his style should make this paper quite valuable for reference to the general practitioner.

Brazier ²⁴_{Feb., '94} records a singular case of neurotic heredity, originating in a male ancestor and continuing in various well-defined neuroses through several generations. The first affected was a male ancestor who developed a Jacksonian epilepsy after an injury to the head received in the Napoleonic wars. Nearly all of the descendants through generations B, C, D, and E showed some neurosis. Among them were noted epilepsy, convulsions, hypochondria, hysteria, melancholia, paralysis, etc. The record is of interest as indicating that heredity may be, apparently at least, a matter entirely of accident. Syphilis in the parent is discussed by Paul Kowalewsky, ⁴_{Jan. 22, '94} who recognizes two forms: congenital idiopathic general epilepsy and congenital cortical syphilitic epilepsy. The former is the more common, might be called dyscrasic epilepsy, and is not amenable to antisymphilitic treatment. The congenital cortical form is due to neoplastic gumma and is often associated with paralysis. This form he believes to be of maternal origin, while the dyscrasic type is paternal,—an opinion which is suggestive, but not final, needing further corroboration. The type recognized by Kowalewsky as the dyscrasic is considered in a paper by Fournier, ¹⁰⁹⁰_{Nov. 30, '93} who suggests for it the term parasymphilitic epilepsy, and who says that there are no other evidences of syphilis, such as nocturnal headache, insomnia, fleeting paralyses, etc.; nor is the disease cured or even benefited by mercury or iodide. The disease develops suddenly without prodroma or apparent cause, usually as a *grand mal*, these attacks being always general. The advanced age at which the epilepsy develops, the clear history of preceding syphilis, the absence of other causes, and the occasional existence of syphilitic accidents are evidences of its origin, according to the author. I should, however, hesitate to accept a case as syphilitic in origin upon such data, knowing how obscurely epilepsy may develop as a purely coincident affection.

Blocq ⁵⁷_{Oct. 8, '93} relates the history of a woman aged 35 years, of marked neurotic ancestry, who developed epilepsy at the age of 14 years, which continued for eight years, when it was controlled by bromides. When about 20 years old she contracted syphilis, for which she was treated with mercury and iodide for two years, continuing the bromides also. She was apparently cured, but three years ago showed unmistakable evidences of cerebral syphilis in nocturnal headaches, insomnia, and diplopia. Treatment by

mercury and iodide for six months entirely relieved the cerebral symptoms; but directly it was discontinued the patient showed rapidly the classical symptoms of tabes, from which she still suffers, and which was not affected by specific treatment. The epilepsy did not recur when the symptoms of cerebral syphilis appeared. The case, as Blocq says, could be claimed by either Charcot or Fournier, so far as the neuropathic or syphilitic origin of tabes is concerned.

Gowers¹⁰⁷⁷_{Sept. 5, '94} writes upon the infantile causes of epilepsy, mentioning with special emphasis the convulsions of dentition, attributable to retardation of development in association with rickets,—an opinion deduced from the clinical observation and teachings of Sir William Jenner upon the latter disease. Such dentition convulsions are, in Gowers's opinion, inadequately and erroneously explained upon the theory of either cerebral congestion or peripheral reflex irritation, though the latter theory is at times possibly tenable. The expression "cerebral congestion," applied as an explanation of these cases, he condemns without qualification. The only paper bearing upon the pathology of epilepsy, and presenting views evidencing trustworthy research, is by Hohne.³⁷¹_{No. 15, '93} It is based upon extended microscopical studies in three cases, the pathological changes noted being increase of neuroglia-cells and thickening of their processes, with loss of intercellular substance and a considerable new growth of vessels. In one case there was colloid degeneration of the ganglion-cells, though this was evidently a mortuary change. These changes were seen principally on the lateral surfaces of the convolutions, and the insula and gyri recti and fornicati were most affected. The motor fibres in the internal capsule were, many of them, degenerated, as were also the pyramidal fibres in the pons, medulla, and cord. The author concludes that epileptic attacks may be explained by cortical irritation alone, but that when a seizure becomes generalized it indicates that the bulb and cord are equally involved. Venous stasis, with acute œdema due to a vasomotor process, explains the pathogenesis of the attack. The pathological changes observed in the cortex are, in part at least, in accord with the findings of Bevan Lewis and Chaslin.

Symptomatology.—Donogio⁵⁹¹_{No. 1, '94} publishes the results of his investigations of the reflexes, muscular force, and measurements

of the extremities in thirty-four cases of epilepsy. The patellar-tendon, Achilles, olecranon, cremasteric, abdominal, and pupillary reflexes were all examined and found to present the widest variation, from extreme exaggeration to complete abolition during the intervals between attacks,—a result which might have been predicated in advance, especially of the major reflexes. In the majority of cases muscular force was diminished, the hand-grasp being most often lessened on the left. Measurements of the extremities usually showed no appreciable difference in the arms, but the left leg was, as a rule, more developed than the right. These conditions were interpreted by the author as indicating simply degeneracy, either hereditary or acquired. In the cases studied they possessed no other significance.

Féré⁹²⁷_{Mar., Apr., May, '94} describes the case of a man subject for many years to a classical form of epilepsy, which was replaced, after prolonged use of bromides, by attacks of milder character, during which the phenomenon of extreme salivary discharge occurred, the lower lip being violently shaken and the flow of saliva amounting at times to as much as 4 ounces (124 grammes). In addition to these attacks the patient frequently had sudden transient discharges of saliva without associated unconsciousness or vertigo. This case, with another resembling it which he quotes, together with the teachings of physiological experiments, lead Féré to the belief that the cortex, somewhere in the field representing movements for the face, contains a centre excitation of which causes increased activity of the salivary glands,—an opinion first advanced, we believe, by Bechterew. An instance of remarkably prolonged unconsciousness following an epileptic seizure, and lasting forty-six hours, is reported by Roth.⁶_{July 28, '94} Quite an interesting case, involving important medico-legal considerations, is reported in detail by Coleman,⁶_{July 21, '94} who records it as a probable example of epileptic automatism. A young woman of the lower class, recently married, but not pregnant, was arrested for stealing an infant which she had never seen before and which she obtained by sending the nurse on a bogus errand. The facts, as subsequently developed, were as follow: The evening previous to the theft she had severe frontal headache and a sense of weight at the vertex; but was unable to recall anything like an epileptic seizure. Her husband noticed nothing during the night, but the

following morning she seemed queer, ate no breakfast, and did not speak. Upon his return the husband found her nursing the stolen baby and pretending to suckle it. She said it was her child and became very angry and excited when contradicted. The matter was reported to the police; she was arrested and while in the prison was maniacally excited until about 4 A.M., when she suddenly "came to." She was entirely unable to recall any incident or event from the time she retired the night before the theft until her awakening in the prison. There was absolutely no motive apparent for her crime. The previous history of the woman was interesting. She had never suffered from convulsions or any positive form of epilepsy except during very early infancy, when she had several spasms. She was, however, always peculiar,—stagnant in manner, having perverted tastes, sensational in actions, and generally hysterical. It seemed difficult to decide whether she was actuated by an hysterical tendency to sensationalism in committing the crime, or whether she acted while in a state of automatism allied to that which occurs in subjects of epilepsy, leading to the commission of purposeless acts. The magistrate seems to have thought her (and, we think, wisely) a more appropriate subject for medical care than legal punishment in either event, and discharged her in the custody of her physician. The report contains references to several somewhat similar cases which have an allied interest. The subject of paroxysmal tachycardia of epileptoid nature, and occurring as a clinical equivalent of epilepsy, is considered incidentally in a paper by Pitres²⁵ Mar. 25, '94 containing a report of a case of Jacksonian epilepsy which presented this symptom. The patient suffered from frequent attacks of tachycardia, with respiratory agony occurring as equivalents of the more severe attacks and also as an aura. Other papers of more or less interest from a clinical stand-point are by Macalester¹ Jan. 27, Feb. 24, '94 (who analyzes two hundred and fifty cases), A. Paris,¹⁵² Oct. 27, '93 and Larrabee.²²⁴ Mar. 24, '94

Petit Mal.—In order to avoid an extended multiplication of terms I shall include under this designation a number of cases variously described by those reporting them as examples of sensory, cortical, or psychical epilepsy, as epilepsia larva, or as modified or masked epilepsy. While such terms are often convenient and are justified in individual reports, the fact should be

emphasized that the morbid principle involved is identical to a certain degree in all such cases. The term *petit mal* is sufficiently elastic to include many of these subtypes without further distinction. A further objection lies in the fact that a single case may present at different periods several of these varieties. An illustration of this fact is afforded in the history of a case reported by Fort.¹⁹
Nov. 17, '94 A young man nearly 20 years old, free from neurotic heredity, early in life showed signs of backwardness in mental development and at the time of observation presented the condition of partial imbecility, but with no history of convulsions or active psychological disturbance until the age of 14 years, when he suddenly and without motive ran away from home. He was returned, by the police, insensible. Two months later he ran away again, and this time was found unconscious under a tree in a park. These elopements occurred several times afterward, but finally ceased, and a new phase of his disease developed, consisting of the sudden onset of a vague, elusive pain. It was necessary to put him to bed, where he would remain a day or two, refusing to eat or speak. These attacks were induced by a rebuff, a reproof, or any mental excitement, and were attended with a most remarkable physical change. At the beginning of the outbreak he appeared like a well-nourished boy, but in a few hours looked as though he had passed through a serious illness,—cheeks and eyes sunken, features drawn, and respiration and pulse below normal. The same author records another example of psychological epilepsy in a girl of weak mind, the condition manifesting itself in explosions of maniacal anger and sexual excitement at irregular intervals. Another case illustrating combinations of clinical phenomena is recorded by Diller.¹
Mar. 31, '94 The patient, a male Hebrew aged 22, was struck over the right frontal region near the median line, rendering him temporarily unconscious. Three months later he began to have spells, preceded by a sensation as of a bitter taste in the mouth, followed by fidgety movements and unconsciousness. He then walked two or three times across the room, making explosive utterances, always indicative of fear, such as “This is a bad house, let us fly from it,” “Let us run,” etc. The gustatory aura was quite constant, as was the psychological perversion. Robertson²¹³
June, '94 reports an interesting case of partial cortical epilepsy involving the right side, beginning, as a rule, with

example of procursive epilepsy of much purer type is recorded by Potts.¹¹²
July, '94 The patient, a child 3 years old, in the first attack was observed to run suddenly across the room, strike her head against the wall, and fall in a general and typical convulsion, followed by sleep. Three similar attacks occurred during the next six months, all beginning in the same way; and in addition several milder seizures occurred in which, several times daily, she would run across the room exactly as in the major attacks, but without convulsion. The same author reports another example of procursive epilepsy, these two having been the only cases noted of this type in one hundred and twenty-five cases of the disease treated at the University Hospital, Philadelphia. A case somewhat allied to this variety of epilepsy, though differing from it in several particulars, is recorded by W. Pascheles.⁸⁸
No. 49, '93 The patient was a man, aged 61, who had suffered from epilepsy since the age of 16, the attacks presenting no special peculiarities, although for twenty years past there had been, for a short time following each severe attack, a tremor affecting both upper and lower extremities. Recently he developed a most peculiar and unique condition following a seizure. On standing upright the body swayed from side to side, and on attempting to walk exhibited a most exaggerated saltatory gait, progressing by a series of jumps or leaps. The symptoms persisted in gradually diminishing degree for two weeks. The special symptoms present were attributed to an alcoholic element in the etiology of the epilepsy.

Cardiac Epilepsy.—Rosin¹¹³
No. 43, '93 writes a very important paper upon epilepsy of cardiac origin, reporting a case and referring to eleven similar ones collected by him from literature. His patient, a woman, had been, up to her 49th year, in good health and was free from hereditary neuropathic taint, syphilis, or alcoholism. At that age she began to have attacks of tachycardia, without discoverable cardiac lesion. The attacks occurred, at first, every six or eight weeks, began suddenly, lasted several hours, and ended abruptly, the face becoming pallid during the seizure, with a feeling of oppression and general distress. A large amount of limpid, almost colorless urine was passed during the attacks. These gradually increased in frequency, occurring finally as often as once a week, usually at night. Six years later the attacks had increased still more in frequency and the physical signs were such

as to make the diagnosis of myocardial degeneration of arterio-sclerotic origin probable. Three years later the woman was seized during the night with an epileptiform convulsion, attended with urinary incontinence, and followed by drowsiness and stupidity. During the subsequent ten years the patient had seven similar attacks, always at night. The eighth proved fatal. In addition to these major seizures she would have, several times yearly, larval or *petit mal* attacks, preceded by an aura of præcordial or epigastric origin, associated with nausea, great pallor, and hallucinations. From a study of these twelve cases Rosin reaches the following conclusions: 1. Disease of the heart and great vessels may cause epilepsy. 2. With a special individual predisposition any form of cardiac disease may cause this type of epilepsy, although myocardial degeneration and arterio-sclerosis seem especially responsible. 3. The cardiac disease causes the epilepsy through nutritional disturbances secondary to circulatory derangement, particularly in the motor area. 4. There may also be degenerative disease of the cerebral vessels. 5. This complication of heart disease is comparatively quite rare and seems to be usually of nocturnal onset, occurring during sleep. 6. The remedies indicated are digitalis, strophanthus, caffeine, and the bromides. The case reported by Pitres, referred to in another part of this article, is of interest in this connection. Pitres's patient suffered from attacks of tachycardia occurring as clinical equivalents of cortical epilepsy due to a glioma of the left paracentral lobule. The writer recalls also the case ¹⁰⁷⁵_{Dec., '94} of a young Jewess, aged 23 years, who consulted him three years ago for attacks of vertigo with sudden and severe palpitation coming on irregularly and under any circumstances, and without any relationship to a definite or exciting cause. The most common time and circumstance of their occurrence were in the morning after waking, but before rising. She had previously consulted two competent medical men neither of whom could detect any evidence of cardiac disease, both diagnosing the case as one of angina pectoris of functional origin. Her family history was quite suggestive. She was the eldest of three children, one of whom, a brother, had died six or seven months previously, of what was said to have been either cerebral meningitis or tumor. An uncle was epileptic and another uncle was insane, dying by suicide. Father and mother were both free from neurosis. The attacks

began at the time of the brother's fatal illness and occurred quite frequently. Patient was frail and anæmic, but had never been seriously ill; nor was she hysterical. The face, according to the mother's description, would become quite pale, then flushed; the heart would palpitate violently, breathing at times becoming tumultuous and oppressed, and occasionally there would be cardiac pain. The patient would feel giddy at the time of the attack, but had never lost consciousness; nor had any convulsive movements ever appeared. After a seizure she would feel exhausted and often would lie down, sometimes falling asleep. While suspecting the true character of the case, I did not feel confident of my diagnosis until three weeks later, when the mother reported an attack (she was sleeping with the patient, by instructions) in which, in addition to the usual symptoms, there had been a slight general convulsion, attended with unconsciousness. Three weeks later another similar attack occurred, though less severe. Both were followed by sleep and some mental dullness and confusion on awaking. A third seizure, attended with unconsciousness and convulsions more severe than either of the others, occurred some three or four months later. During the intervals between these major attacks she had, in addition, seizures which were evidently of the character of *petit mal*, in one of which she burned her arm, dropping a match, with which she was lighting the gas, up her sleeve; in another she let fall a glass. The attacks of cardiac palpitation with pain and vertigo also continued to occur, but much less frequently, averaging only two or three weekly, whereas they had before occurred as often in a day. I lost sight of the case through the removal of the patient to another city, but have learned that she now suffers from frequent attacks of severe *grand mal*, as many as five occurring in one week, recently, and that she has, though comparatively rarely, the cardiac seizures with which the disease was inaugurated. In some of the major attacks there is a well-defined aura, referable to the heart. The improvement noted while under treatment was due to digitalis and strophanthus, with the bromides, the latter alone having but little effect. The transition from attacks of cardiac palpitation to vertigo, to *petit mal*, and thence to typical *grand mal* was a very striking demonstration of epilepsy apparently of cardiac origin. Heart-lesion could not be determined, though such failure to detect heart disease during

life does not preclude its existence, as demonstrated at many autopsies. Whether the case was reflex or central in origin could not be determined, but the fact of decided predisposition was made clearly evident by the family history,—a fact of considerable importance as regards the pathogenesis of these cases.

Vertiginous Epilepsy.—An example of vertigo occurring as an equivalent of ordinary epilepsy which had been relieved by bromides is recorded by Choupepe.³¹ Apr. 18, '94 The patient, a woman, had, when first observed, from 150 to 200 attacks of general convulsions yearly. The second year she had 60 attacks, the third year 6. Simultaneously with the disappearance of the major attacks she suffered from vertiginous seizures, always accompanied by involuntary urination of over a litre (quart) at a time.

Epilepsia Tarda.—In a paper upon late epilepsy Mendel,⁶⁹ Nov. 9, '93 formulates the following conclusions: 1. Epilepsy appearing after the fortieth year may be called epilepsia tarda. (Charcot and Debœuf name the thirtieth year.) 2. The type occurs absolutely and relatively oftener in males than in females. (The opinion of Gowers and Bennett.) 3. Heredity plays a very important rôle in the etiology. (Echeverria, Nothnagel, and Reynolds to the contrary notwithstanding.) 4. It is milder and less progressive usually than epilepsy occurring in the young. 5. The mind is less apt to be affected. Cases of syphilitic epilepsy are not included by the author, and these observations are not, therefore, in opposition to the dictum of Fournier, that the cause of most cases of epilepsy developing after the age of 30 are due to syphilis. His conclusions are misleading in another respect, however, in that he apparently includes under the term “epilepsia tarda” those cases which occur very late in life and which have been designated by some writers as senile epilepsy. In such cases a fatal termination is the rule, and the mind is usually seriously impaired. Mendel emphasizes the fact, previously noted by Reynolds, that the period of life between 30 and 40 is one of crisis in the individual predisposed to epilepsy; and it is presumably of this class that he writes, though his tables include cases up to the age of 65 without distinction. Two cases of the senile type are recorded by Mansell Sympton.² May 19, '94 In both the first attack occurred at the age of 73. Commenting upon Sympton’s paper, W. Johnson Smyth,² June 23, '94 reports observations made by him

upon the specific gravity of the blood in aged epileptics, in whom he noticed a constant increase of from one to three degrees at the time of the seizure. He suggests, though in rather vague connection with his experiments, that "the epilepsy of old age is due to a want of harmony of the nerve-cells with their altered environment." Arterial degeneration with altered cerebral nutrition, with or without associated cardiac lesion, is a much more definite and probable explanation of the development of epilepsy in the aged in many cases.

Hystero-Epilepsy.—The extraordinarily large number of cases of this form of epilepsy recorded annually emphasizes very pointedly the necessity for a more definite application of the term. Probably one-half of all such reported cases are pure types of major hysteria. In only a small proportion is there any evidence that a true epileptic element is present. The term should, perhaps, be restricted to cases of true epilepsy in which there is coincident or superadded hysteria, and that association of convulsions with other phenomena of hysteria, heretofore called hystero-epilepsy, should, in order to avoid confusion, be more properly designated convulsive hysteria. The present application of the term, as generally understood, leads to much that is confusing in prognosis and treatment, especially to the general practitioner. An illustrative case is reported by Prewitt,⁸² July 14, '94—that of a woman, 42 years old, who began to suffer from "markedly epileptiform" attacks, occurring chiefly at night and at or about the menstrual period, dating back to a miscarriage. The use of bromides, in 40-grain (2.60 grammes) doses every three or four hours, was absolutely ineffective, but the case was promptly cured by removal of the ovaries, one of which was found slightly cystic (*sic*) and adherent by fibrous bands. The "markedly epileptiform" attacks are said to have been, some of them, very violent "and lasting sometimes as long as twenty-four hours." Another case, evidently thoroughly and intelligently understood by the reporter, is recorded by P. B. McCall.¹⁹⁹ June, '94 In this case the symptom-picture, as described, corresponds closely to the classical *hystérique convulsif* of Charcot, with opisthotonos and emprosthotonos, catalepsy, and various hysterogenetic zones. The various antiepileptic drugs were ineffectual, but a rapid and permanent cure was easily obtained from the use of nitrite of amyl. Still another case, due, as in the

others, to menstrual disorder or, at least, associated with it, is reported by Brush.⁸⁵
Apr., '94 Pershing⁹
Apr. 7, '94 criticizes Hansell⁹
Mar. 3, '94 for abusing the term epilepsy in applying it to two cases which were evidently functional and hysterical, reported by Hansell as cured by ocular tenotomy. An interesting case of transference anaesthesia, occurring in a girl subject to epileptiform seizures and maniacal outbreaks, whose mental and epileptiform disorders seemed to be in a substitutionary relationship to each other, is described by Robertson,²¹³
Nov., '93 who throws out the unique suggestion that it is unfortunate that the phenomena observed in these cases are of such interest to medical observers, since their frequent demonstration tended, by concentrating the patient's attention upon them, to make such symptoms permanent and more intense. Melon⁴⁵⁴
Oct., '93 gives some statistics as to the prevalence of hysterio-epilepsy among the soldiers of the army of France.

Reflex Epilepsy.—Féré,⁹²
July, '93 whose writings upon epilepsy are always of interest and value, publishes notes of a case which supports the opinion of Trousseau, expressed some years ago, that spasmodic tic of the face and true epilepsy are closely related. Féré's patient, a man 42 years of age, suffered for years from typical facial neuralgia. In July, 1891, he developed attacks of true epilepsy alternating with attacks of facial neuralgia. Bromides, for a time, relieved both conditions. The facial muscles were chiefly involved in the attacks. The patient's mother had suffered from epilepsy. Gallerani and Pacinotti³⁹²
Jan., '94 report a case of reflex spasm of the tongue, lips, and throat, due to the irritation from an old wound of the left occipital nerve, and which was at first mistaken for a case of bulbar paralysis. The cicatrix was situated between the occipital protuberance and the cervical prominence, and at its extremity was a small tumor, pressure upon which caused great pain. The reflex effect was attributed to the anastomotic connection between the nerves of the occipital region and those of the cervical plexus with the hypoglossal. Excision of the scar cured the case, which, while not one of true epilepsy, is, none the less, of interest in this connection. Roberts²²⁴
Dec. 30, '93 relates the case of a young man who, shortly after the healing of an ugly wound of the arm, developed epilepsy, which, however, appeared to be purely coincidental. In the discussion which followed Irwin related the history of a man affected with a spasmodic affection of

the throat resembling croup, very severe and persistent, and not amenable to any remedial measures until surgical means were resorted to for the removal of an encapsulated bullet, which had been accidentally fired into the arm at the insertion of the deltoid anteriorly. The attacks disappeared promptly and have not recurred since. A. E. Garrett⁸⁵_{Aug., '94} reports several varieties of neurosis, including three of "epilepsy," attributed by him to reflex irritation from phimosis, all of which were cured by circumcision.

Treatment.—The employment of opium, according to the method advocated by Flechsig (see ANNUAL, 1894), has been quite extensively adopted in an experimental way in the treatment of epilepsy. The general consensus of opinion is to the effect that the method constitutes a valuable adjuvant to the bromides, but is in no sense to be considered superior to the latter or likely to supersede them. Collins⁵⁹_{Sept. 22, '94} tried the method in thirty-six cases, twenty of which were kept under daily observation for one year. No untoward effects followed the use of opium in any case, though great care was necessary during the first weeks of treatment. Very chronic cases and those dependent upon or associated with organic gross disease gave better results. The author's conclusions are as follow: 1. The plan suggested by Flechsig is not a specific in the treatment of epilepsy. 2. In almost every case in which it has been tried there has been a cessation of the fits for a greater or less time. 3. A relapse generally occurs in a period varying from a few weeks to a few months. 4. The frequency of the fits after the exhibition of opium is—for the first year, at least—lessened more than one-half. 5. The attacks occurring after the relapse are much less severe in character than those the patient had been accustomed to have. 6. This plan of treatment is particularly valuable in ancient and seemingly intractable cases. 7. In recent cases of idiopathic epilepsy it cannot be recommended. 8. The opium plan of treatment is seemingly an important adjuvant to the bromide plan, as ordinarily applied. 9. The opium acts symptomatically and merely prepares the way for and enhances the activity of the bromides and other therapeutic measures. 10. This plan of treatment permits the use of any other substances which are known to have a beneficial action in epilepsy.

Stembo²¹_{No. 15, '94} followed Flechsig's method in nine cases with decided benefit in all after several weeks' treatment. In several cases the attacks disappeared entirely. Stembo employed smaller doses of opium than Flechsig,—0.02 to 0.06 gramme ($\frac{1}{3}$ to 1 grain) increased up to 0.24 to 0.36 gramme ($3\frac{3}{4}$ to $5\frac{1}{2}$ grains) several times daily. Fraenkel⁴¹_{July 12, '94} does not look upon the method with equal favor, having found benefit in only one case of ten in which it was tried.

The results of recent extended experiments as to the value of the animal extracts in epilepsy afford a striking example of the extent to which the truth may be perverted through misguided enthusiasm. Many scattered reports have appeared since Brown-Séquard's paper a few years ago, detailing most marvelous results from these agents; and although Féré, after thorough investigation, pronounced them of no value whatever and often injurious, favorable reports continued to be published, and, in fact, special institutions have been advertised during the past two years as having been established for the treatment of epileptics by these agents. Féré's conclusions have been confirmed with striking exactness by Bourneville and Cornet,⁷³_{Dec. 9, 16, '93} who tested the value of these extracts in 28 epileptic inmates of the Bicêtre Hospital. They found no change or slight diminution (*post hoc*) of the number of attacks in 8 cases, while in the remaining 20 the attacks were increased in number and the general symptoms aggravated. Germain and Colucci⁵⁸⁹_{Oct. 19, '93} met with a very similar disappointing result from the use of antirabic injections tested experimentally in the Naples Hospital, in fourteen cases. No permanent benefit resulted in any case, and many unpleasant symptoms were observed, such as increased restlessness and irritability and more prolonged and aggravated post-epileptic terror and depression.

Many of the older drugs are finding new friends, and this seems particularly true of belladonna and its alkaloid. Moeli,²²_{Aug. 29, '94} de Rienzi,⁵⁹⁶_{No. 6, '94} Block,²_{Jan. 6, '94} Fahmy,²⁹⁵_{June, '94} and several others bear clinical testimony to its well-known value, either alone or in combination with the bromides. Moeli found the combination of benefit in thirteen out of thirty-seven cases, but considers the opium treatment of Flechsig superior. De Rienzi used spinal galvanism in conjunction with atropine in one case, with resulting

disappearance of the epilepsy. Kisselew⁸²⁷_{No.51,'93} has found hydrastinine in doses of $\frac{1}{6}$ to $\frac{1}{4}$ grain (0.01 to 0.015 gramme) remarkably beneficial in two cases of epilepsy. Hyoseyamine as an adjuvant is considered preferable to the belladonna by Lemoine,²⁴_{No.10,'94} who gives doses of about $\frac{1}{6}$ grain (0.01 gramme) daily. Bardet²⁹⁶_{Apr.24,'94} has been studying the clinical effect of bromethyl-formine, a derivative of formol, and considers it an excellent substitute for the bromides where the latter are, for any reason, not well borne. The dose is from 3 to 4 drachms (12 to 16 grammes) daily. Siminoff claims⁸¹⁴_{Mar.,'94} to have had excellent results in several cases from the administration of infusion of common tansy, a glassful every evening. Curare is highly recommended by Dobronravov³_{July 4,'94} as a remedy of certain value in the status epilepticus. The dose used was from 0.006 to 0.007 gramme ($\frac{1}{11}$ to $\frac{1}{9}$ grain) hypodermatically. The drug is a favorite, in ordinary epilepsy, with Waxham.¹⁵⁵_{Jan.,'94} Bondurant,²⁷⁸_{July,'94} in a paper upon the treatment of epilepsy associated with insanity, states that borax, antipyrin, phenacetin, etc., are rarely of any benefit; that beta-naphthol is occasionally of value; that bromides do more harm than good, as a rule; and that the best single remedy for the status epilepticus is blood-letting. Evidence continues to accumulate attesting the value of duboisine, especially in hystero-epilepsy. Among those who bear testimony to its effectiveness are Albertoni,¹¹⁶_{No.8,'93} Cividalli, and Giannelli.⁵⁸⁹_{Feb.3,'94} Albertoni tried it hypodermatically in doses of $\frac{1}{160}$ grain (0.0004 gramme) in three cases, and considers it a very useful remedy. Cividalli and Giannelli found it especially serviceable in epileptic insanity and in relieving various conditions of modified epilepsy. The injections are nearly always painful and, in some cases, caused more or less local inflammatory reaction.

A very valuable paper by Seeligmüller,¹⁶⁹_{Mar.,'94} bears upon the importance of details in the treatment of epilepsy, and outlines special methods of drug administration, especially the bromides. The eye treatment of epilepsy forms the subject of several papers one of which, by Ranney,¹_{Feb.3,10,17,'94} contains the histories in detail of twenty-five cases. The author reiterates his former opinion as to the significance and importance of the relationship between convulsive seizures and defects of muscular accommodation. A very conservative and logical paper upon this subject appears from Carey A. Wood.¹_{July 7,14,'94} A summary of the author's conclusions,

which may be said to accord with the generally-accepted opinion of neurologists, is as follows: "In the absence of ocular symptoms, apart from the epilepsy, an operation upon the eye-muscles stands in the same therapeutic relation to a cure or relief of the disease as do other surgical procedures that have, during the past century, been in vogue, such as tracheotomy, setons, ligature of the vertebral arteries, trephining, oöphorectomy, circumcision, castration, the actual cautery, the resection of stray scars, and so on. These operations bring about a cure or relief of the epilepsy (both idiopathic and hystero epilepsy) by their powerful mental effect upon the patient,—a truth long recognized by neurologists. Genuine cures by eye treatment of any kind must necessarily be confined to those cases where a faulty ocular apparatus acts as a peripheral irritant. It remains yet to be shown that anomalies of the extrinsic muscular portion of that apparatus are, to any large extent, responsible for the seizures of epilepsy. The eye treatment of epileptics who present signs of ocular distress has not received that attention which the importance of eye-strain in the category of reflex irritants seems to call for. The eyes should be carefully examined in every case of epilepsy where asthenopic symptoms are present or are suspected. I question the wisdom of encouraging the profession, and through them the laity, to believe that every case of idiopathic epilepsy is a suitable one for eye treatment; but prefer to say that only those cases are fit subjects, in the proper scientific sense, for eye treatment whose visual organs are palpably the source of irritation, giving rise to symptoms generally included under the term eye-strain. That when all remedies fail, some such operation as Reynolds suggests—easy to perform, perfectly safe, and yet of a severity and character tending to make a lasting impression on the patient's mind—is indicated. I would suggest the removal, at intervals, of small pieces of skin from various parts of the body, the denuded spots being allowed to heal by granulation."

Dodd ⁶_{Oct. 28, '93} gives the results in 100 cases of epilepsy in which, in addition to the employment of bromides, errors of refraction were corrected by glasses in 75 cases. Of these 23 cases were not available for deductions, as they either did not carry out instructions or failed to report. Of the remaining 52 there were 13 who ceased to have fits for periods of from four months to one year.

Three cases remained as before and 36 improved, some of them quite markedly. Positive conclusions are obviously impossible, since bromides were continued in full doses in all cases.

The record of the year shows much to encourage the further extension of operative interference for the relief or cure of epilepsy of the traumatic or focal variety. The subject is fully discussed in the article on "Brain Surgery," vol. iii, section A.

State provision for epileptics continues to furnish a theme for earnest and praiseworthy effort on the part of those who advocate its adoption, as illustrated by the papers of J. B. Maxwell,⁷⁷⁹ Peterson,²⁷⁸ Letchworth,¹⁷⁰ and by Sauerhering.⁶⁹

MENINGITIS.

Etiology.—In a paper on "Meningitis of Obscure Origin," Bottomley,¹⁵ in a praiseworthy attempt to eliminate the term idiopathic as applied to these cases, argues that, when tubercle, otitis, trauma, syphilis, and other well-known causes are not present, the probability is that the micro-organism of the epidemic variety is the cause, the case being a sporadic example of cerebro-spinal meningitis. The author concludes that idiopathic cases are characterized by the following points: (*a*) Both brain and spinal cord are frequently attacked, and spinal symptoms are common; these symptoms are rare in other varieties of meningitis which attack both brain and cord, if we consider retraction of the head to be not necessarily a spinal symptom. In some cases spinal symptoms appear before cerebral. (*b*) The duration of illness varies from one to four weeks, the variation depending mainly on the stage of the disease at which the cerebral membranes become affected. (*c*) Recoveries are fairly frequent. (*d*) The best treatment seems to consist in the administration of mercury and iodides. (*e*) The affection of the cerebral membranes may be either at the vertex or the base or both. (*f*) The cases occur perhaps most frequently in the cooler parts of the year. There is some evidence for considering these cases to be associated with epidemic meningitis and for considering that the cause of both may be the diplococcus pneumoniæ.

Two cases which rather tend to support this view as to etiology are recorded by Elizabeth Woods.¹⁰⁹⁸ Both were adult patients, both ended fatally, and in both careful microscopical

and bacteriological examinations of the brain and spinal cord were made, the pneumonococcus lanceolatus being found in abundance in the exudate. In one the cerebral invasion was apparently primary; in the other the meningitis was secondary to a pneumonia.

Another valuable clinical example of meningitis, secondary to pneumonia and due to Fränkel's diplococcus, is recorded by Fadjew²¹_{June 9, '94}; while Brozzolo, of Turin,³¹⁹_{Aug. 11, '94} outlines certain symptoms which he considers of value in the differential diagnosis between meningitis due to the pneumonococcus and that due to tubercle.

Smith⁸¹_{Oct., '93} gives notes of a case of unknown origin and ending fatally quite suddenly, with sharp elevation of temperature from normal to 105° F. (40.6° C.) in less than two hours, coma, abolition of all reflexes and of respiration, and apparent death, though the heart continued to beat and the pulse to be perceptible for thirty-eight hours afterward, artificial respiration being practiced almost continuously meanwhile.

A case of hæmorrhagic meningitis secondary to an erysipelas, developing about a malignant pustule, is reported by Roger and Crochet.¹⁷_{Mar. 24, '94} At the autopsy the pia mater was found transformed into a sanguineous mass; the dura mater was congested, the inflammation extending down the cord, the lower dorsal and lumbar cord being surrounded, as with a ring, by blood from a copious hæmorrhage. Bacteriological examination revealed a double infection,—from streptococci and from characteristic anthrax bacilli. The source of the latter infection could not be determined.

A fatal case of meningitis secondary to otitis is related by Randall,¹¹²_{June, '94} and a case of meningitis with abscess, occurring as a result of infection with the typhoid bacillus, by Josserand.²¹¹_{May 20, '94}

Traumatic Meningitis.—Morton, of Philadelphia,¹⁹_{Mar. 10, '94} reports the results of an autopsy in a fatal case of meningitis, the result of a pistol wound. The ball passed through the right superior maxillary bone just below the orbital rim, fracturing the ethmoid and vomer and breaking through the body of the sphenoid into the left frontal lobe, which it had penetrated nearly to the upper surface. Several splinters of bone were carried into the brain-substance and yet the patient, the next day, was able to appear in

the lecture-room as the subject of a clinical lecture, answering all questions intelligently and complaining of no pain. The third day, however, symptoms of acute meningitis supervened and death occurred ten days after the injury. Among the more interesting symptoms observed was total blindness of the left eye, with atrophy of the optic nerve, which, as was demonstrated at the autopsy, had been severed completely by the bullet. The value of the ophthalmoscope as a means of surgical diagnosis was demonstrated, as, through its use in this case, the course of the bullet was determined.

Cerebro-Spinal Meningitis.—Ferguson⁵⁹_{Aug. 4, '94} presented the brain of a man who was picked up unconscious in the street and died three days later in the hospital, with symptoms which had led to a diagnosis of meningitis. The pia mater everywhere contained pus and lymph and there was pus in the fourth ventricle also. Microscopical examination showed intense inflammation of the pia everywhere, with punctate hæmorrhages, and the cortical vessels contained innumerable small round cells, some in the vessel-walls and some in the perivascular spaces. These cells were also found infiltrated through the cortex at various points, especially at the base of the left frontal lobe, where, over an area two centimetres in diameter, the entire brain-cortex was infiltrated with pus. Bacteriological examination revealed numerous diplococci identical with the “micrococcus pneumoniae crouposæ,” which were taken from several parts of the brain and spinal cord. This micro-organism, Ferguson says, he has found in the vast majority of cases of cerebro-spinal meningitis examined during the past few years.

Flexner and Barker,⁵_{Feb., Mar., '94} whose preliminary report of the notable epidemic of this disease which occurred at Lonaconing, a mining town in Maryland, was referred to in the ANNUAL for 1894, publish a more complete account of their observations, especially with reference to the pathology and the results of bacteriological investigations. Their original observation as to the constant presence of the micrococcus lanceolatus was confirmed.

Three papers,²³³_{Nov., '93} bearing upon the symptomatology, pathology, and treatment of cerebro-spinal meningitis, were read at a recent meeting of the Columbus Academy of Medicine, which reflect, in condensed and practical form and with fair accuracy, our

present knowledge of the subject. The writers were Rowles, Deuschle, and Dixon. The fact that the death-rate from this disease in New York City reached, in 1893, the alarming total of four hundred and sixty-nine cases—more than twice the average yearly number for a decade past—serves as a basis for a paper by Berg,⁵¹_{May, '94} chiefly bearing upon the clinical manifestations and apparent etiological factors noted in this epidemic.

Four cases of cerebro-spinal meningitis, with recovery, are reported by Caillé,⁴⁶²_{Apr., '94} E. B. Haywood,⁴³_{Dec., '93} Crutchfield,⁴⁰_{Jan., '94} and Stamps.⁴³_{Oct., '93} Haywood's patient was totally deaf, dumb, and blind for seventy-nine days, eventually recovering completely every faculty and function which had been affected. The case related by Crutchfield is open to much doubt as to the accuracy of the diagnosis. That of Stamps was of sporadic type, with moderately severe symptoms. These recoveries occurred under ordinary methods of treatment.

Tubercular Meningitis.—Meningeal tuberculosis is rarely observed during the first months of infantile life, although cases have been recorded in which symptoms were apparently present almost immediately after birth. Caillé⁴⁶²_{Aug., '94} relates the history of an infant, 3 months old,—whose father died of pulmonary phthisis and whose mother presented an advanced stage of the same disease,—that died with symptoms justifying a diagnosis of tuberculous meningitis, which was confirmed at the autopsy. The symptoms extended back into the first month of the child's life.

A case of very extensive tubercular infection involving lungs, heart, spleen, and brain, and causing death by basilar meningitis, is recorded by Jones.¹⁰⁵_{Jan. 1, '94}

Bézy¹¹⁸_{Dec., '93} noted an unusual condition, post-mortem, in a boy, aged 3 years, who died of tuberculous meningitis, the surface of the brain showing profound pallor and anæmia instead of congestion, suggesting quite markedly a pathological obliteration of the arteries. The author also reports several clinical examples of meningitis of varied origin, one of which was secondary to pneumonia, the deposit at the base showing numerous pneumococci.

Clinical reports of cases of tuberculous meningitis are published by Florentine,¹⁸⁵_{Aug., '94} Tuley,⁵¹_{May, '94} and Kelley.⁵⁴⁷_{Jan., '94} The case related by Kelley is rather interesting in that the family history

of the patient, a girl 9 years of age, showed no traces of tuberculosis. The child herself had never manifested any previous evidences of tubercular disease, nor had she suffered from any disease, such as measles or pneumonia, which would predispose to its development.

Of further interest was the fact that the only symptoms were gradually-increasing drowsiness, slight headache, and slight hebetude, there being no paralysis in any form and no convulsion or delirium throughout. The diagnosis was made post-mortem, the convexity and base being both affected, especially the latter.

Smith, of Galveston, ¹⁴³_{Oct., '93} publishes a well-written history of a case of meningeal tuberculosis secondary to pulmonary disease in an adult. The earlier symptoms of cerebral invasion were not diagnostic and were interpreted as being of hysterical origin.

Three papers by Alforo, ¹⁰⁵⁰_{Jan., Feb., '94} Jules Simon, ²¹²_{Sept. 10, '94} and Zariquiez ⁴⁵⁶_{July 25, '94} are devoted to the consideration of diagnostic data observed in tubercular meningitis.

SYPHILIS.

The persistent fidelity with which English medical men cling to mercury as the preferable drug in nervous syphilis is not only most remarkable, but absolutely inexplicable in view of the vastly superior effectiveness of American methods of treatment by large doses (200 to 800 grains—13.5 to 53.5 grammes) daily of potassium iodide. The almost absolute unanimity of American medical sentiment, supported by a corroborative sentiment to a certain degree in Germany and France, should have had the effect of inviting a trial of the method; and yet both Gowers ⁴⁵¹_{Oct., '93} and W. Hale White ¹⁰⁷_{Feb. 7, '94} reiterate their teachings as to the superiority of mercury. The reason for such precedence is suggested in their method of administering the iodide, which is “adequate and will do all that can be done in the course of four to six weeks in doses of from 7 to 10 grains (0.45 to 0.65 gramme) or even 15 grains (1 gramme) for the first few days, three times daily.” Hale White says that mercury in the form of perchloride, injected subcutaneously, stands first, the iodide coming next, which, he says, should be given in “large doses, beginning with 5 grains (0.31 gramme) three times daily, increased to 15 grains (1 gramme) at the end of a week.” Both Gowers and White urge caution in giving larger

doses or in continuing this dose for any length of time, as it is "dangerous."

A well-studied case of syphilitic disease of the nervous system, affecting both brain and spinal cord and producing general paralytic symptoms, is reported by Raymond.⁹⁴ Other papers upon cerebral syphilis are by Eskridge,⁹ Barbour,⁹ Nammack,⁵⁹ Harris,² and Villani.⁵⁸⁹

MULTIPLE CEREBRO-SPINAL SCLEROSIS.

The etiology and pathogenesis of this affection have been exhaustively studied by Lebrun,⁴⁵⁴ who finds the general consensus of opinion to be in favor of an infectious origin and a resultant endarterial inflammation. Oleni,⁹⁹⁶ believes that the point of departure is in the perivascular lymph-spaces, causing an infiltration of lymph-elements and destruction from degeneration of the parenchymatous elements.

The pathological anatomy has been made the subject of study and investigation by Taylor,¹⁰⁰⁵ three cases forming the basis for the following conclusions:—

1. White and gray matter are affected indifferently.
2. There is no seat of predilection for the development of the sclerotic patches.

3. The cortex of both cerebrum and cerebellum are affected.

In two cases all the cranial nerves except the olfactory were affected, and in the third case the sclerotic degeneration in the cranial nerves was not well defined, but most of the roots were diseased. In one case there was well-marked degeneration of the cauda equina.

He rejects the theory of a primary basis of disease in the blood-vessels for the following reasons:—

1. The sclerotic patches are not always found near vessels.
2. The vessels do not show any great change in well-degenerated areas.
3. In one case the vessels were found not diseased.

Tweedy¹⁶ records an interesting example of the disease, the origin of which could not be explained, unless a habit of masturbation stood in some causal relationship.

Lannois²¹¹ records a case of generalized tremor of the extremities, increasing from emotional causes and preventing the

patient from working, diagnosed as paralysis agitans, but open to some suspicion as to the correctness of such diagnosis on account of the age at which the disease developed,—eleven years. I can recall only one case of paralysis agitans beginning in early life,—that reported by Charcot, the patient being several years older than Lannois's case.

Marie ³_{Oct., '93} contributes a paper of interest and importance upon a type of disease very much resembling, in certain clinical aspects, both multiple sclerosis and Friedreich's ataxia, but which has been found, in the two recorded-autopsies, to have been due to an atrophy of the cerebellum. To this symptom-complex he proposes to give the name "cerebellar heredo-ataxy." In the cases quoted the symptoms as described constitute so exact a picture of disseminated sclerosis as to suggest identity: nystagmus, vertigo; slow, jerky speech; loss of power in lower limbs, exaggerated knee-jerks, ataxic gait, sensory disturbances, intention tremor, etc. The diagnosis must, we think, be largely one of post-mortem findings.

A very similar case is related by Royet and Collet. ⁹⁴_{No.1, '93}

A case designated as one of false disseminated sclerosis is reported by Williams. ²_{Dec., '93} The patient, a girl about 4 years old, was seized with convulsions on the fourth day of an attack of measles of ordinary severity. She lay unconscious for ten days. When admitted to the hospital, some three weeks later, her condition was one of apathy. She did not speak, and had some difficulty in swallowing, and could not sit up. Three months later she could stand and walk with assistance and speak a little, but the movements of the upper extremities were uncertain on account of coarse tremor and ataxia. At the age of 6 her speech was slow, deliberate, and syllabic. She was backward in intelligence and there was intention tremor of the hands. Two years later her condition had improved, but speech was still peculiar, and, although she could walk some distance, her gait was of the spastic type, with quite active knee-jerks and occasional ankle-clonus. When 10 years old her condition was much the same. No mention is made of sensory disturbance, of any cranial nerve-defect, of the condition of the fundus, or of muscular nutrition. The author seems inclined to consider these cases as representing mild forms of acute disseminated myelitis with a

vascular origin primarily in the cord. In the subsequent discussion, Beevor expressed himself as being not altogether satisfied that the symptoms were due to primary changes in the cord. They seemed to him to be due rather to vascular changes in the cerebrum, such as superficial scattered cerebral hæmorrhages or thrombosis affecting superficial vessels in both hemispheres, with secondary degeneration in the cord.

DISEASES OF THE SPINAL CORD.

By H. OBERSTEINER, M.D.,

VIENNA.

TABES DORSALIS.

Etiology and Pathogeny.—The views concerning the etiological relation existing between syphilis and tabes dorsalis have undergone little actual modification, although from the various publications of this year it has become evident that the opponents of this theory are steadily diminishing in number. Isaak²⁸_{V.17, No. 5} would, however, deny this relation, basing his opinion upon a study of twenty-five cases, though he fails to bring any satisfactory proof to support his assertion. Grimm⁵⁷_{Aug. 29, '94} reports his experiences in Japan, where syphilis is very wide-spread, while tabes but seldom comes under observation. Sachs, of New York,¹_{Jan. 6, '94} sustains the relation between syphilis and tabes, and also cites the occasional very clearly defined meningitic process. According to the accurate statistics of Lagondaky,¹⁴_{July 29, '94} 42 per cent. of all tabetic patients have formerly been syphilitic. From a study of the reports of the neurological section of the Charité Hospital, Berlin, Kuhn²⁰⁶²_{'94} states that syphilis positively existed previously in 37 per cent. of the cases, most probably in 31 per cent., and possibly in 7 per cent.

It would most assuredly be going too far always to refer the occurrence of tabes to syphilis; and many other causes may, either with or without the existence of syphilis, induce the affection. T. Rosenblatt, of Berlin,²⁰⁶³_{'93} opines that an hereditary nervous taint is very frequently present in tabetic disease (fifty-one times in eighty-one cases), and that the action of the syphilis upon the nervous system is thereby promoted. Tabes dorsalis thus belongs to the *famille neuropathique*; the children procreated by tabetic parents during their illness either die soon after their birth or are very weak.

The question as to whether tabes can be exclusively caused by a trauma was considered in detail by Hitzig, of Halle,²⁰⁶⁴_{'94} at

the Eleventh International Congress at Rome. He concludes that tabes traumatica is of very rare occurrence and has no characteristic symptoms; should, however, a trauma, either alone or in combination with exposure to cold, be, under certain circumstances, the promoting cause of tabes, we should be forced to assume that, in these cases, the trauma or the cold had proved the agent inducing the formation of a poison corresponding, in its operation upon the nervous system, with the hypothetical poison of syphilitic infection.

Accepting the presence of an injurious poison, be it syphilitic or otherwise, we cannot readily reconcile this with the fact that only very circumscribed portions of the nervous system, as certain special parts of the spinal cord, should be thereby affected. The assertion of Sidney Kuh, of Chicago, ⁹ Mar. 3, '94 may be here emphasized, viz., that the entire nervous system, both peripheral and central, is more or less involved in tabes. This author passes in review the separate symptoms of the disease, and finds—in this he probably goes rather too far—that the majority (even the ataxia, for instance) are not of spinal origin. Cases have also been known in which the symptoms of tabes were occasioned simply through parenchymatous neuritis of the peripheral cutaneous nerves, while the posterior roots and the spinal cord were perfectly healthy,—for example, the *névro-tabes périphérique* of Dejerine, of Paris. ²⁰⁶⁵ Tellinek, ¹⁹³ of Vienna, ⁴¹ Mar. 20, '94 has been able to demonstrate pathological changes in the cerebellum in all of the six cases of tabes examined by him,—for instance, atrophy of the nerve-cells in the corpus dentatum and degeneration of the medullary fibres in the lobules.

But in all cases of tabes the affection of the spinal cord would appear to be of the greatest importance, and therefore, in almost all examinations made with the object of elucidating the nature or condition of this disease, the changes in the medulla spinalis are made a particular subject of observation. In Berlin two lectures by Leyden ¹¹⁴ V. 25 have given rise to very important discussions. We have seen, by the reports of former years in the ANNUAL, and particularly from the studies of Redlich, Marie, and Dejerine, that the posterior roots, in their intra-medullary course, were designated as the primary diseased portions of the spinal cord; this was the opinion first formulated by Leyden (1863), and which he to-day still advocates: The arrangement and development, the inauguration and progress, of the tabetic process only become comprehen-

sible, according to him, when we assume that they originate in the posterior roots and extend, according to the course of the same, through the posterior columns. As far as the cause of this disease of the posterior roots is concerned, and particularly the initial point of the same, Leyden (who, it is well known, persists in denying the relation of syphilis to tabes) is inclined to assume that the process begins, first of all, in the peripheral nerves; that these are most subject to injuries of various kinds (trauma, cold, etc.); and that a parenchymatous neuritis can here be easily established. Hitzig, in the discussion following this statement, again emphasized the fact that it is difficult to understand how such a degeneration process can extend from the periphery through the spinal ganglia, which form an unsurmountable barrier, and then extend through the spinal cord to the posterior roots. Leyden, on the contrary, basing himself upon a former work by Marinesco, stated that an "atrophy of inactivity" might be formed in the spinal ganglia, consequent upon the peripheral degeneration, which would permit the extension of the process toward the roots.

Marie,³_{Jan. 13, '94} again emphasizes the exogenous origin of tabetic sclerosis of the posterior column, while in other similar diseases of the posterior columns—pellagra, etc.—the initial point is to be found in certain nerve-cells of the spinal cord, these being, therefore, endogenous degenerations. He also calls attention to the fact that primary degeneration of the medullated nerve-fibres never occurs, the process being always secondary, consequent upon changes in their trophic centres or upon their detachment. Marie considers, as he has already stated in former works, disease of the spinal ganglia to be the cause of this degeneration of the roots; Oppenheim,⁴_{July 23, '94} also expressed this opinion in the above-mentioned discussion in Berlin; and it is further advocated by Ströbe, of Freiburg.²⁰⁶⁶_{'94} Leyden hereupon justly remarked that it does not seem quite comprehensible how a cause of disease should, in particular, affect portions like the spinal ganglia, which occupy such a sheltered position, and which are, moreover, of quite independent formation; the alterations there found are likewise very slight, in comparison to those highly-pronounced degenerations found in the spinal cord. Modern views concerning the condition of tabetic disease of the spinal cord may be summarized as follows:

that we have here to deal with a secondary degeneration of the intra-medullary prolongations of the posterior roots, the initial point of this degeneration being as yet undetermined.

Important objections may be advanced against the hypotheses in question (*i.e.*, peripheral nerves, spinal ganglia, etc.), and Obersteiner and Redlich, of Vienna,²⁰⁶⁷_{v.2} have deemed it necessary to institute a research as to the normal anatomical conditions. This research demonstrated the fact that each posterior root, at the point of its penetration into the spinal cord, appears to be more or less tightly constricted by the pia and the cortical layer of the spinal cord, frequently to such an extent that normally at this point the nerve-fibres entirely lose their medullated layer. Near the entrance-point, also, an artery of the pia usually lies adjacent to the nerve-root, thus forming an important *locus minoris resistentiæ*. When we consider that syphilis in its advanced stages induces chronic proliferation of connective tissue with atrophy (sclerosis) in various organs, and that it further provokes specific arterio-sclerosis, we can readily understand that each of these two factors, attacking the posterior root at its weakest point, would speedily cause its degeneration. The thickening and tumefaction or, at least, shrinking of the pia, and even meningitic alterations with proliferation of the nuclei, as well as diseased arterial conditions, are clearly demonstrated. For this reason the intra-medullary sections of the root-fibres are more diseased in fresh cases than the extra-medullary. It is thus unnecessary to refer all cases, without exception, to syphilis, with its hypothetic toxins; while it becomes clear that, under certain conditions, other causes besides syphilis (for instance, arterio-sclerosis) may give rise to tabes. The symptomatology also becomes clearer; for example, the lancinating pains and crises occasioned by the pressure upon the nerve-roots, and even the transitory improvement caused by suspension and nerve-stretching, are explainable through the fact that the tension brings about a loosening of the compressed, swollen connective tissue. According to these investigations, therefore, the causative condition of tabetic disease of the spinal cord is to be found in a compression of the posterior roots, at their point of penetration into the spinal cord, with consecutive ascending degeneration of their intra-medullary prolongations.

An entirely new conception of the pathogenesis of tabes,

which at present, however, only represents an ingenious hypothesis, is made public by Edinger, of Frankfort.⁴⁰⁴
No. 106 According to his idea, tabes is a "disease of exhaustion" of the spinal cord, referable to a disturbance of the nutrition of the cord, induced by some noxious agent (notably syphilis). Only those fibrous portions which perform their functions most frequently become degenerated, owing to the unusual requirements to which they are subjected, because the reproduction of the elements consumed cannot take place rapidly enough. Similarly, a muscle when moderately used becomes strengthened and when overworked atrophies.

Symptomatology — (a) *Spinal Symptoms*. — According to Arthur Schiff, of Vienna,²⁰⁶⁷
v. 2 muscular atrophies are of more frequent occurrence in tabes than is generally supposed, though they are often overlooked. In the case observed by him there was a slowly-developing atrophy, of the Aran-Duchenne type, of one of the upper extremities. The limitation of this condition to a single extremity, as well as the presence of fibrillary twitchings, would not indicate a peripheral neuritis, as accepted by Dejerine, as a cause of tabetic muscular atrophy, but rather a central origin in the spinal cord. Actually, there was found, in the corresponding anterior horn, a small, sharply-circumscribed sarcoma, which Schiff, however, on account of its diminutive size, does not consider of sufficient importance to have occasioned such a considerable atrophy. J. Collins²⁴²
Feb., '94 describes a case in which the symptoms of progressive muscular atrophy first presented themselves, those of tabes only occurring several years later.

In twenty tabetic patients examined by Biernacki,⁵²⁰
No. 2, '94 of Warsaw, he found, on pressure upon the ulnaris, in the sulcus ulnaris at the elbow, that fourteen times on both sides and once on one side there was no sensation of pain. In all other diseases of the spinal cord afterward examined by Biernacki this symptom was absent. He therefore considers it a pathognomonic symptom of tabes. We may, moreover, mention the fact that disturbances of sensibility in the region of the nervus ulnaris have long been recognized in the early stages of tabes.

Hughlings-Jackson and Taylor²
June 23, '94 have again examined a patient whose case was reported by them two years and a half ago. The case in question was one of tabes, with absence of the patellar reflexes. Hemiplegia appeared on the right side, followed by the

re-establishment of the patellar reflex on the same side. Since then it has again greatly diminished in intensity, probably on account of the increasing degeneration of the posterior columns. M. Vucetic, of Pancora,²⁰⁶⁹₉₃ has also studied the condition of the patellar reflexes in tabes cervicalis. So prominent a searcher as Gowers¹⁰⁷⁷_{Oct. 4, '93} asserts that he is convinced that the patellar reflex is never absent in healthy persons, but only when there is structural disease of the musculo-nervous system.

(b) *Symptoms in the Domain of the Cerebral Nerves.*—Symptoms affecting the nervus olfactorius are very infrequent in tabes. Negro, of Turin,⁹⁹⁷_{Mar. 8, '94} has a tabetic patient under observation, in whom, simultaneously with the gastric crises, pronounced acuteness of the sense of smell (without parosmia) is present. He scents the various odors, and is then able to distinguish them at a great distance; odorous solutions placed in the mouth he recognizes easily in the double dilution. That there is here a degeneration process in the nervus olfactorius is demonstrated by the fact that there is of late a diminution of the olfactory power.

G. Rummo, of Naples,²⁰⁷⁰_{'94} refers most comprehensively to the disturbances of the organs of sight in tabes (sensory and motor). In certain cases there are first present exclusively, or almost exclusively, the symptoms of disturbance of sight; these cases he designates as "tabes ocularis," and he refers all other symptoms in this region, occurring during the further progress of the affection, to the "tabetic eye." He describes two cases of tabes ocularis, both in women. The symptoms in both were: mydriasis, irregularity of the pupils, very weak reaction to light,—in one case good, however, as to accommodation, in the other case quite fixed and motionless. There was bilateral irregular atrophy of the optic nerves, slowly-progressing blindness, achromatopsy, and gradual diminution of the field of vision. Severe paroxysmal attacks of headache occurred in both cases; in one there were lancinating pains in the legs, in the other gastric crises. Rummo calls attention to the fact that slight paresis of the ocular muscles, particularly in the early stages of tabes, even though of temporary duration, is of very frequent occurrence, though often overlooked.

The case of tabes observed by F. Peterson, of New York,⁹_{July 28, '94} is noteworthy from the fact that hemianopsia was very suddenly developed on the left side without any other symptoms.

Cozzolino⁵⁹⁶_{Feb., '94} has studied the rather rare disturbances of the auditory nerve. Tabetic lesions of the auditory nerve are also usually only present in the preataxic stage, notably in cases of so-called tabes descendens. Pacetti²⁰²²_{'94} reported, at the International Medical Congress in Rome, a case of tabes with bilateral atrophy in the region of the trigeminus, loss of the teeth, paralysis of the soft palate, laryngeal crises. He found degeneration of the ascending (spinal) root of the trigeminus, of the ascending glosso-pharyngeus root (fasciculus solitarius), and of the substantia ferruginea. I would here remark that degeneration of the spinal trigeminus root in tabes is not by any means rare, and that the ascending root of the glosso-pharyngeus nearly always degenerates simultaneously. This is easily understood when we consider that the fibre fasciculi of both are entirely homologous with the intra-medullary course of the posterior spinal nerve-roots.

Chvostek, of Vienna,⁷⁵_{Nov. 15, '93} observed a tabetic patient in whom a great many cerebral nerves were diseased, even the seldom-affected facial nerve. Asymmetry of breathing was particularly noticeable, the left half of the thorax being much less active than the right.

Lépine²¹¹_{Feb. 18, '94} reported, at a meeting of the Société Nationale de Médecine de Lyon, a case of tabes in which there was temporarily present the rare symptom of labio-glosso-laryngeal paralysis (aphonia; the impossibility of pronouncing a syllable, even softly; movements of the tongue very slow and restricted). The nervus accessorius Willisii in particular was affected in the case reported by Ilberg, of Berlin³⁰⁰_{v. 18}; the muscles supplied by this nerve were highly atrophied on both sides; the soft palate was intact; the sterno-cleido-mastoideus was like a thread, and the lower portion of the cucullaris had almost entirely disappeared. In the larynx the abductors were completely paralyzed, and the adductors were also paralyzed on the right side. A marked hyperhydrosis was noticeable (pronounced on right side), particularly on the face.

H. Schlesinger, of Vienna,⁸_{June 28, July 5, '94} has studied the disturbances of the larynx in tabes, and refers to three new cases. In the first both posterior muscles (the left in particular) and lateral cricoarytenoid were atrophied as well as the recurrent nerves (principally the left). The vagus nuclei appeared normal, while the ascending glosso-pharyngeal root had degenerated on both sides, which condition, however, had nothing in common with the above-

mentioned muscular atrophy. In the third case the symptom of ictus laryngeus, so exceedingly rare in tabes, was present. A peculiar sensation in the larynx having been experienced by the patient, acute dizziness supervened, with or without loss of consciousness. The permanent condition of nystagmus horizontalis, also present in this case, is equally rare in tabes. Moritz⁹⁰_{May, '94} describes two cases with marked laryngeal disturbances (abductor paralysis).

Magnan²⁰⁷¹_{'94} calls attention to the not infrequent pharyngeal symptoms occurring during tabes. Both sense and motor disturbances may arise. The sensory symptoms are either anæsthesia or hyperæsthesia (principally in the atabetic stage), and occasionally there is pain. The motor symptoms are of especial importance, because they greatly endanger the life of the patient. The dysphagia is caused by paresis or spastic contractures, which latter, if they persist, make the nourishment of the patient a difficult matter. Clonic contractures of the pharynx may also occur (pharyngeal crises).

(c) *Visceral Symptoms*.—Schayer, of Berlin,²⁰⁶²_{'94} in reporting one case, describes the rectal and urethral crises. About every fourteen days the patient experienced pleasant dreams, accompanied by ejaculation and evacuation of the urine. The following day he felt very badly, having severe pain in the abdomen. This occurred when the other symptoms of tabetic disease were as yet but little developed. Fournier, of Paris,¹⁰⁰_{Jan. 11, '94} refers in detail to a case in which the gastric disturbances were abnormally severe. Syphilitic infection had occurred twelve years before, through revaccination upon the arm. Cathelineau³⁶⁰_{Apr., '94} found the hydrochloric acid contained in the stomach greatly increased during the period of the gastric crises in tabes. A considerable quantity of the acid could be found, however, in the same patient during the days free from such crises. Anders, of Philadelphia,⁹_{Aug. 25, '94} noted dilatation of the stomach in a tabetic patient, and is inclined to consider this condition as a result of the tabes.

The relation existing between tabes and diabetes, mentioned by Blocq, of Paris,¹⁰⁹⁰_{Apr. 30, '94} may vary in character; diabetes being present, certain symptoms of tabes may occur (*pseudotabes diabétique*); or during the course of tabes sugar may appear in the urine (tabes with glycosuria). There is, besides, relation between

true tabes and true diabetes, through the fact that these diseases occur in various persons of the same family, in consequence of an hereditary nervous taint, both appearing at times in the same individual. Blocq quotes one such case, in which the treatment of certain symptoms of diabetes proved efficacious, while nothing availed for those of genuine tabes.

(d) *Trophic Symptoms*.—Ossification of the muscles has been thus far but seldom observed in tabes. Lockering, of Sheffield, ⁸²⁴Jan., '94 however, states that he found, in the right rectus femoris muscle of a tabetic patient, a substance of bony consistency, seven inches in length. Tabetic arthropathies are, in the majority of cases (over two-thirds), unilateral. Souques and J. B. Charcot, of Paris, ⁴⁵²Aug., '94 cited three cases in which the affection was bilateral, symmetrical, and very pronounced. The deep anæsthesia of the affected joints was especially noteworthy, as well as the fact that intense lancinating pains existed several years before the appearance of disease of the joints. The seat of this pain was, however, not in the region of the joints, but invariably in more peripheral portions of the limb. The bilateral, symmetrical appearance of the arthropathies would indicate that they were of spinal origin, and had not been induced by peripheral neuritis.

W. B. Coley, of New York, ⁹⁶Sept., '94 mentions a case of bilateral tabetic arthropathy of the hip-joint, the joint affection appearing at a relatively late stage (ten years after the beginning of the disease).

R. Rasmus, of Zawadda, ²⁰⁷²'94 quotes a case of pronounced gonitis tabetica. As the diseased leg was a great hindrance in walking, it was amputated at the thigh. Marinescu ¹⁰⁹⁰July 30, '94 presents an hypothesis of the origin of spinal arthropathies in tabes and syringomyelitis to the effect that, owing to the disease of the sensory tracts, all those impressions upon the vasomotor centres which should stimulate these latter to sufficiently nourish the joint are lost.

Brissaud, of Paris, ⁴⁵²Nov. 4, 5, '94 expresses himself in a similar manner, saying that the trophic equipoise is a reflex act; in this way may be explained the direct influence exercised by sensory disturbances in general, especially in tabes, upon the nutrition of the tissues, notably in arthropathies. W. Noyes, of New York, ⁵⁹June 16, '94 cites a case in which the patient was brought to the hospital in Vienna,

when already in the death agony; tabes was diagnosed on account of a peculiar affection of one of the knees.

In addition to the trophic disturbances already described as occurring in tabes, there may be mentioned the changes in the teeth, which are fully referred to by Lemarie and Bernard.⁷⁸¹
 Six cases of tabes have thus far been described in which the teeth fell out; nearly always, however, only those of the upper jaw. This spontaneous loss of the teeth most frequently occurs in the later stages of the disease, and is due to the diseased condition of the nervus trigeminus. After the loss of a tooth, ulceration of the mucous membrane of the mouth may occur, beginning at the spot where the tooth was. Wickham²⁸⁷_{No.1,'94} fully describes these ulcers, which are quite painless and usually present a spot where the bone is exposed. Letulle, of Paris,¹⁰⁹⁰_{Oct.15,'94} also quotes a case of tabes with perforating ulcer of the mouth and loss of the teeth. No other bulbar symptoms were present.

Therapeutics.—Since medical science remains almost powerless against tabes—the rejoicing over suspension, Brown-Séguard's injections, etc., having been of short duration, owing to the limited results attained—any indication of a new or but little-known remedy must be hailed with thanks, particularly when it is as harmless as that so much used in Belgium,—phosphate of sodium.

Forbes Winslow, of London,⁶_{Nov.13,'93, et seq.} had this remedy brought to his notice and used it in a number of cases with surprising results. A solution of 0.1 gramme ($1\frac{3}{4}$ grains) of the salt in 1 gramme ($15\frac{1}{2}$ minims) of cherry-laurel water is injected close beside the lumbar vertebral column. According to the severity of the disease, one or two injections are made daily. After twenty-five applications the improvement is very noticeable, and after fifty very pronounced. A. Cordes, of Geneva,⁶_{Nov.23,'93} also attained happy results with this treatment. In consequence of a case in which the general health had been regained through the use of strychnia, Schumpert, of Shreveport,⁵⁹_{May 19,'94} recommends this drug in augmented doses. He begins with a solution of 0.15 gramme ($2\frac{1}{4}$ grains) strychninum sulphuricum in 140 grammes ($4\frac{1}{2}$ fluidounces) of water and syrup (in equal parts), a teaspoonful to be taken every four hours, about 0.002 gramme ($\frac{1}{32}$ grain) per dose, twelve per day. Each new bottle contains 0.04 gramme

($\frac{2}{3}$ grain) of additional strychnia, until toxic symptoms put in an appearance,—in one case at 0.15 gramme (2 $\frac{1}{4}$ grains) (!) per day.

Gowers, of London, ¹⁰⁷⁷_{Oct. 11, '93} considers arsenic as indicated in one of the well-known forms, and has almost always had good results upon the use of chloride of aluminium, 0.15 to 0.30 gramme (2 to 4 grains) twice or three times a day after meals. It seems to have a combined tonic and sedative influence on the structures affected and an especial effect in lessening the tendency to the pains. He utters a pronounced warning, however, against the use of large doses of mercury. The iodine treatment, on the contrary, may be regarded as harmless, if we except the frequently occurring iodism; and Max Weiss, of Vienna, ¹⁶⁹_{Feb., '94} obtained a marked improvement in an already advanced case of tabes, by the administration of large doses of iodide of sodium, as high as 8 grammes (2 drachms) per day. He justly exclaims against the overhasty use of morphine for quieting the pains. Hutchinson ⁸⁰⁶_{Jan., '94} again recommends antipyrin or phenacetin, 15 grains (1 gramme) per dose when optical atrophy appears. Capriati ⁵⁸⁹_{Nos. 226, 227, '93} advocates the use of the electric current in the direction of the optic nerve. Glorieux ¹¹⁷⁵_{No. 3, '94} and Talko ³⁵³_{V. 31} recommend suspension.

As the best and most reliable treatment for tabes,—which, however, demands great patience both in the patient and the physician,—that advised by Fraenkel (see last year's ANNUAL) appears to hold its own. Bechterew, of Petersburg, ⁷⁵_{Sept. 15, '94} is one of its eager advocates, declaring it to be evident that we have in Fraenkel's method a glorious symptomatic remedy for ataxia in tabes dorsalis.

It may, nevertheless, be noticed that W. Atkinson Wood, of Victoria, ²⁸⁵_{Feb. 15, '94} claims to have had good results with Brown-Séquard's testicular fluid. Grigorescu ⁴¹⁰_{No. 2, '94} claims to have witnessed improvement consequent upon the use of testicular fluid of the guinea-pig, —i.e., the rapidity of sensory conduction became normal. Routh, of Bridgewater, ²_{Dec. 30, '93} on the contrary, not only found no good results from its use, but observed such a reduction of the pulse after each injection (up to 36) that he in no way considers its application as harmless.

FRIEDREICH'S ATAXIA.

A considerable number of illustrative cases comprehensively present to us the differential diagnosis, as well as the pathogenesis,

of this relatively rare disease. From a therapeutic stand-point but little progress can be noted. Hodge²⁸²_{Dec., '93} presented, at the Canadian Medical Association (September 21, 1893) three cases of Friedreich's ataxia in one family,—two sisters and a brother. The father had eczema of legs in so severe a form that he was obliged to use crutches; he also had leucoderma of the hand; a paternal uncle suffered from hemeralopia. These were the only neurotic points in the family history.

Two other cases are described by Frank R. Fry, of St. Louis.³⁶⁴_{Dec. 15, '93} The patients were two sisters, aged 20 and 17 years, in whom the pronounced symptoms of Friedreich's disease had made their appearance at the age of 11. The scoliosis and malformation of the feet, particularly hyperextension of the toes, were very marked in both patients.

A. James, of Edinburgh,³⁶_{Dec., '93} found, by means of graphic representation of the reeling or staggering in the case of a man aged 26 (no proven neurotic taint in his family), that, contrary to the accepted opinion, the staggering only becomes marked when the eyes are closed. In Mackenzie's case⁵_{Apr., '94} the symptoms of Friedreich's ataxia presented themselves without authenticated heredity after an attack of roseola. Krause⁵⁷³_{p. 735, '93} also gives the history of a case. Bassi⁵⁰⁵_{No. 123, '93} is of the opinion that not only the nervous but other affections in the history of the family should be inquired into. In the case described by him, two brothers and a sister of the patient were rachitic, another brother idiotic, the mother osteomalacial. He considers, therefore, that in Friedreich's disease, as in idiocy, anomalies in the development of the nervous system, intimately connected with constitutional congenital alteration of the bony structure, are in question.

G. Besold, of Erlangen,¹¹²⁵_{v. 5, Nos. 2, 3} quotes in detail four cases of juvenile ataxia, establishing at the same time the differential diagnosis with regard to tabes. He calls attention in particular to the characteristic forward droop of the head, which occurs through the fact that the patients are in the habit of following the ataxic movements of the legs with their eyes. The type of true Friedreich's ataxia is now fully determined, yet there are various deviations from this type, particularly mixed forms in combination with symptoms of other hereditary nervous affections. The case cited by Chauffard³_{'93} may be regarded as a new variety. The

patient was a boy, 8 years of age, in whom weakness of the legs showed itself at the age of $3\frac{1}{2}$ years. The striking symptom in this case was a very pronounced athetotic movement over the entire body, most particularly in the lower extremities, upon voluntary motion.

Krafft-Ebing, of Vienna, ⁸_{Nov. 1, '94} presented, at the Society of Physicians in Vienna, two patients with Friedreich's disease, both showing in a striking manner a rather abnormal type of the disease. In the one case there was, however, an hereditary nervous tendency, as the father of the girl had for a long time been affected with severe nervous twitchings. In her case the first symptoms of the disease appeared at the time of the first menses, in that of the young man before the tenth year. The following symptoms were common to both cases: Moderately-static ataxia with very pronounced cerebral ataxia; entire absence of the patellar reflexes; slight nystagmus on looking sideways; very slight disturbances of speech; no sensory disturbances; intelligence normal. In the girl scoliosis and the characteristic malformation of the foot were beginning to be noticeable. The lecturer was inclined to consider this a combined systemic disease of the spinal cord, with decided involvement of the lateral fascicular tract of the cerebellum. Ewald, of Berlin, ⁴_{Aug. 6, '94} presented a girl 16 years of age, of rather weak intellect, who showed, in a somewhat indecisive manner, symptoms of Friedreich's disease.

A rather interesting addition to the knowledge concerning this affection is furnished by the four cases of Stacy Wilson, of Birmingham. ³²_{Oct., '93} In one of these glycosuria existed, which has not been observed before. Another case is noteworthy, owing to its relatively rapid progress, nearly all the symptoms having been fully developed in two years and eight months; in the same child hypertonicity of the muscles of the lower extremities (probably due to the degeneration of the pyramidal tracts), marked choreic movements, and even tremor could be noticed. In another case there was pronounced weakness of the muscles of the back and nape of the neck, with a tendency to choreiform movements in these muscles. H. T. Mackay ⁵_{Aug., '94} also reports an isolated, non-hereditary case, in which the symptoms were developed with very great rapidity, the differential diagnosis from chorea being rather difficult. The disease history and genealogical tree of three brothers and sisters

having hereditary ataxia were also given. In two of these the symptoms appeared following an attack of the measles. In one member of the family acute poliomyelitis had occurred, in two others paralysis of the ocular muscles.

Ch. W. Burr, of Philadelphia, ¹¹²_{June, '94} states that the true recognition of the pathological processes in Friedreich's ataxia is difficult because, with but very few exceptions, all the cases upon which an autopsy is performed are very old and of many years' standing. He had the opportunity of examining the nervous system of a patient whose case had been described in detail four years previously by Griffith. He found the cerebrum and cerebellum in general rather smaller than the normal, but not yet atrophied. The spinal cord, in particular, seemed very small, especially in the region of the enlargement. Microscopically, nothing abnormal was found in the brain. In the spinal cord there was marked degeneration of the posterior columns; in the lateral columns the region of the pyramidal tract and of the direct tract of the cerebellum were plainly degenerated, without there being any decided boundary on the side of the healthy portions; there was unmistakable degeneration of the pyramidal anterior fasciculi. The posterior roots and cells of Clark's columns were much degenerated. The results of this examination fully coincide with those of the majority of former autopsies. As to the nature of the process, he is of the opinion that a neuroglia proliferation (sclerosis) of the posterior columns constitutes the primary lesion.

Lunz, of Moscow, ⁶⁹_{No. 33, '93} presents the case of a boy, aged 13 years, with disturbances of sensibility in the lower extremities. The two cases (brother and sister) described by J. Wallace Anderson, of Glasgow, ²¹³_{Sept., '93} are supposed to be the first of this affection in Scotland. Dreschfeld, of Manchester, ²_{Apr. 21, '94} has two cases, a boy and a girl, under observation.

Marie, of Paris, ³_{No. 56, '93} minutely describes the affection so closely resembling Friedreich's ataxia in many of its features, which may be best designated as ataxia hereditaria cerebellosa. In both diseases the familiar character is striking; the motor disturbances and those of speech are the same, while the symptoms distinguishing the cerebellar hereditary ataxia from Friedreich's disease are: its appearance later in life, the maintenance or augmentation of the patellar reflexes, frequent spasms, ocular disturbances, absence of

kyphoscoliosis, and malformations of the foot (club-foot). In the two cases of hereditary cerebellar ataxia thus far submitted to a post-mortem examination atrophy of the cerebellum was present. Although these two affections appear sharply defined in typical cases, Marie is nevertheless of opinion that, clinically as well as anatomically, there exists a certain relation between the two. In short, it is possible that both diseases are only varieties of the same original condition, inasmuch as the pathological starting-point presents itself as an hereditary degenerative process in the central nerve-organs. Certain transition forms may also exist between these two affections, and Brissaud and Londe, of Paris,¹⁰⁹⁰ Mar. 15, '94 quote such a case. The patient was a young woman in whom, during pregnancy, at the age of 21 years, the first symptoms (scoliosis, stiffness and uncertainty of movement in the legs) were noticeable. When she came under their notice (the disease having continued for two years) the symptoms in general indicated Friedreich's ataxia, the more so as a younger sister presented similar symptoms. The late appearance of the malady and also the marked tendon reflexes were against this diagnosis; on the other hand, the scoliosis and the fact that facial disturbances were almost entirely absent indicated that hereditary cerebellar ataxia, in its typical form, must also be excluded. It would appear that we have here an illustration of a transition form.

It may be accepted as demonstrated that hereditary atrophy of the cerebellum may give rise to symptoms similar, in many points, to those of Friedreich's disease. Senator, of Berlin,⁴ No. 21, '93 has formulated the opinion that the truest form of this affection is caused by atrophy of the cerebellum. Schultze, of Bonn,¹⁰⁰⁵ V. 5, Nov. 1, 2, 3 severely criticises this acceptance of a "chemically-pure" form of Friedreich's disease, and holds to the spinal character of the same (disease of the posterior roots and combined systematic degeneration). Besides the anatomical alterations of a case of long standing, the disease history of three patients is given, in whom the symptoms indicated by Friedreich could be noted; the only deviations from this type were the very slight locomotor ataxia and the existence of Romberg's symptoms. The fact that he also confines the pathognomonic significance of the nystagmus to its correct value is also important. It would appear, as has been explained in detail by his pupil, Offergeld,²⁰⁷³ '93 that, among 200 persons having

neither nerve nor eye diseases, only 25 per cent. did not show any bulbar twitchings when requested to fix their gaze upon a finger passed not very rapidly in front of their eyes. The controversy between Schultze and Senator has been continued at some length,⁴ July 9, Aug. 13, '94 but the result cannot be considered as satisfactory. It would probably be best, agreeing with Londe,¹⁰⁹⁰ Sept. 30, '94 to consider that there actually exist both a cerebral and a spinal form of hereditary ataxia, which, indeed, Schultze himself is inclined to admit. According as the cerebellum or the spinal cord is the portion especially injured, the symptoms will be correspondingly modified; in the first case the cerebral ataxia, and in the second the tabetic ataxia, will be the type presented. Londe also cites two other cases of the cerebellar form. In the patient referred to by Redlich, of Vienna,¹¹³ Nov. 16, '93 the symptoms of cerebral ataxia and psychical weakness had existed since early childhood. Redlich therefore considers this case as only distantly related to Friedreich's disease, though he believes in the existence of atrophy of the cerebellum and chronic hydrocephalus. Although not, strictly speaking, cases of Friedreich's ataxia, the following cases of combined systemic disease may be here mentioned: Hochhaus¹⁰⁰⁵ V. 4, Nov. 5, 1905 reports the case of a woman, 47 years old, formerly syphilitic, who became affected, three years before her death, with weakness of the legs, gradually increasing to paresis, when the arms also became involved. Pains in the legs, paræsthesia, and finally paralysis of the bladder and rectum occurred. At the autopsy symmetrical disease of the pyramidal lateral fasciculi and lateral columns of the cerebellum, as well as of the posterior columns, was found. The pyramidal tracts were principally degenerated in the lumbar cord and the posterior columns in the cervical cord. Felix Neumann, of Forst,²⁰⁷² '93 also cites a case of combined systemic disease.

SYPHILIS OF THE SPINAL CORD.

Erb having, in 1892, given a comprehensive and, in many instances, correct delineation of the type of syphilitic spinal paralysis, and Oppenheim having later on (1893) demonstrated that we have to deal with a diffused meningo-myelitis syphilitica, we now have a collection of illustrative cases which in part confirm and in part complete the "symptom-complex" as detailed by the above authors as well as by others,—for instance, the

cases cited by Sachs⁴⁷ Autumn No., '93; W. Aldren Turner, of London⁶ May 5, '94; Bureau¹²⁷ Jan. 12, '94; Nobl⁵⁷ Dec. 17, '93 and Reiner, of Vienna.⁴¹ Mar. 12, '94 In Popow's case⁵⁷¹ No. 45, '93 dementia syphilitica also made its appearance at a later stage. Although the forms of spinal luetic disease may be very varied, Gerhardt, of Berlin,⁷⁵ Dec. 1, '93 affirms, from personal experience, that the majority of the cases are allied to the type delineated by Erb.

The majority of authors recognize two forms of diffuse syphilitic disease of the cord,—the acute and the chronic. The chronic type is much better known clinically, and is also more frequent than the acute; owing to the very marked spastic symptoms in the lower extremities, it is very frequently diagnosed as spastic syphilitic paraplegia, as transverse syphilitic myelitis (Charcot), or as spinal syphilitic paralysis (Erb). Although less well known, the acute form is usually strictly differentiated, both anatomically and clinically, from the chronic type. Sottas, however, considers that the two simply represent variations of intensity and localization of the same disease process. There are not only many intermediate forms, but it may also happen that a syphilitic paraplegia begins in the acute form, and later on changes to a chronic type, or *vice versâ*, when during the course of a chronic form acute complications aggravate the condition. Muchin, in a monograph, refers to syphilitic paraplegia under the name of paralysis spinalis spastica toxica, because the same form of paralysis may also occur through other intoxication (lathyrismus, pellagra).

J. Michel Clarke, of Bristol,⁶ May 20, '94 describes six cases ending comparatively well. Lamy, of Paris, who has made syphilitic meningo-myelitis the subject of comprehensive anatomical and clinical studies,⁴⁵² '93 concludes as follows: Syphilitic affections of the spinal cord may be nearly always referred to a diffuse meningo-myelitis, afterward affecting the vessels entering the spinal cord. There may be only the condition of leptomeningitis, or the dura mater may also be diseased; in the latter case the cervical region is the seat of predilection. The meningitis may also extend upward toward the base of the brain. In many cases the vascular changes largely preponderate over the meningeal. In recent cases one is easily convinced that the veins are usually first diseased, and even at later stages of the disease they are generally much

more seriously affected than the arteries. Clinically regarded, two periods may be determined. The first, the prodromal period, comprises the disease of the meninges, and is principally characterized by the pain, syphilitic rachialgia. In the second period the spinal cord is itself involved in the disease process.

Sottas, of Paris, last year (see ANNUAL, 1894) referred to the significance of a primary disease of the vessels in the development of syphilitic myelitis; in a very complete work²⁰⁷⁴₉₄ he now endeavors to more fully justify his opinion, showing that the various symptomatic types of syphilitic disease of the spinal cord depend upon the extent of the disease of the vessels and upon its predominance in certain regions of the cord. R. T. Williamson, of Manchester,⁶_{July 4, '94} also emphasizes the significance of vascular affections, and has demonstrated that suddenly-appearing paraplegia (with anæsthesia and paralysis of bladder and rectum) is caused by thrombosis of a vessel with hæmorrhage.

AMYOTROPHIC LATERAL SCLEROSIS.

In his first lecture as the successor of Charcot, Brissaud¹⁴_{Nov. 12, '93} spoke of amyotrophic lateral sclerosis as the affection named after his great teacher,—*maladie de Charcot*. He presented two cases, of which the second is worthy of particular notice on account of its rapid development. The patient was a very strong young man, aged 20 years, who had been ill a little less than three months, and in whom the first bulbar symptoms were noticed in connection with augmentation of the masseter reflexes. C. H. Brown, of New York,¹_{Apr. 28, '94} observed a boy, aged 15, in whom the first symptoms were bulbar,—a loss of proper speech and difficulty in whistling and in moving the tongue. These symptoms had rapidly been followed by difficulty in deglutition, closing of the eyes, deafness and inability to move the facial muscles, paralysis of the seventh nerve on each side, also the “tapir” mouth. There was trophic degeneration in the muscles of the face and neck; the tongue was very much atrophied. Added to the symptoms of glosso-labio-pharyngeal paralysis there appeared, later on, the symptoms of amyotrophic lateral sclerosis in the upper extremities, and the same in the lower extremities, though to a lesser extent.

Marie, of Paris,¹⁴_{Nov. 10, '93} in further development of his earlier work, has greatly added to the knowledge of the anatomical

processes peculiar to this affection. He has arrived at the conclusion that amyotrophic lateral sclerosis is essentially to be regarded as a wide-spread, progressive poliomyelitis; this poliomyelitis is, however, not restricted to the true motor anterior-horn cells, in which the anterior-root fibres originate, but also involves many other nerve-cells of the gray substance, and even those at the base of the posterior horn, designated as *cellules des cordons*, of which the cylinder-axis prolongations extend to the lateral fasciculus and form a longitudinal fibre of the same. It thus becomes clear that the degeneration of the lateral column in amyotrophic lateral sclerosis is not confined to the true funiculus pyramidalis. When we consider that the degeneration of the pyramidal tract diminishes in intensity toward the centre through the pons and the cerebral peduncle, and sometimes even disappears completely, we must admit that the pyramidal fibres do not find their disease impulse in the cerebrum, but rather in the spinal cord, and perhaps, owing to the inflammatory process, affecting the medullary segment in question. Nonne, of Hamburg, ⁷⁵ May 16, '94 on the contrary, seems inclined to at least admit the possibility of a primary co-existent disease of the cerebral cortex. He observed a man with the unmistakable symptoms of amyotrophic lateral sclerosis; autopsy showed atrophy of the anterior horns and degeneration of the pyramidal tract, which could be followed into the pons. [The cerebral peduncle and inner capsule were not examined!] In the cerebral cortex (ascending frontal convolution and cuneus) the inward-radiating projection fibres, and particularly the association fibres of Meynert,—which latter usually remain intact in secondary cortical disease,—had to a considerable extent disappeared; so that we may infer as probable a primary disease of the cerebral cortex. This is the first time that degeneration of the medullary fibres in the cortex has been demonstrated in amyotrophic lateral sclerosis.

The fact that care must be shown in diagnosing this affection is proven by the case described by M. Wolff, ²⁰⁶² '94 in which the disease progressed with the symptoms of amyotrophic lateral sclerosis, and at the autopsy capillary hæmorrhages were found throughout the entire spinal cord, as well in the gray as in the white matter, especially in the dorsal cord; there was, besides, atrophy of the anterior-horn cells in the cervical and dorsal cord,

and several foci of softening. This condition, no doubt, tends to the confirmation of Marie's opinion.

Senator, of Berlin, ⁶⁹_{No. 20, '94} examined the spinal cord of a woman who had shown the symptoms of amyotrophic lateral sclerosis. He found unmistakable atrophy of the ganglion-cells, particularly in the upper portions of the medulla, numerous recent small hæmorrhages (which had no direct relation to the malady itself), but no sclerosis of the lateral columns. He, therefore, agrees with the opinion of Leyden—contrary to that of Charcot—that amyotrophic lateral sclerosis is no self-generated disease, and that the spastic symptoms are not invariably the expression of sclerosis of the lateral columns. A case observed by Lannois and Lemoine ⁴⁵⁷_{May, '94} presented abnormal symptoms. A pronounced degree of atrophy of the optic nerve was noticeable. The degeneration in the region of the lateral columns was so intense that no normal nerve-fibres could be found in the diseased portions. A peculiar case cited by Strümpell, of Erlangen, ¹⁰⁰⁵_{v. 5, 2, 3} may be mentioned, in which there was very slight muscular atrophy, although the degeneration was mostly confined to the pyramidal columns, the motor nuclei being hardly involved.

ANTERIOR POLIOMYELITIS.

Confirming the statement long since made by W. Sinkler and others, it would appear that the greatest number of cases of infantile poliomyelitis occur from the month of August to the month of October. Putnam and Wyllys Taylor, of Boston, ⁹⁹_{Nov. 23, '94} give an account of thirty-nine cases treated during the last six years in the Massachusetts General Hospital; of these, twenty-three occurred during the months above named (August 6th, September 11th, and October 6th). The epidemics of the disease in question, noticed thus far, have also occurred during this time. The authors are unable to state whether any particular atmospheric conditions favor the onset of the disease. Arch. Church, of Chicago, ³⁶⁴_{Nov. 15, '93} calls attention to the difficulty of detecting poliomyelitis at the beginning, but hopes that much may be accomplished by early resort to therapeutic measures.

H. Tuley, of Louisville, ⁵¹_{Jan., '94} cites a case in which anterior poliomyelitis and compression myelitis occurred after Pott's disease, in a little girl aged 10 years. The poliomyelitis began during her second year, and caused partial paralysis of the left

leg. In her tenth year caries of the fifth and sixth dorsal vertebrae occurred. Eskridge, of Denver, ¹⁴³_{Oct., '93} and Th. Diller ⁹_{Oct. 28, '93} quote cases having certain points of relation to poliomyelitis adultorum, but in neither of them does the diagnosis seem at all certain. Middleton, of Glasgow, ²¹³_{June, '94} relates the following case: A man having slept out-of-doors while there was snow on the ground, awoke with complete paralysis of the four extremities. Four days later atrophy was also noticeable in all the members. Improvement soon set in, rapid at first, afterward slower.

Concerning the pathogenesis and the anatomical basis of poliomyelitis, the opinion of Charcot is steadily losing adherents. While Charcot, as is well known, determined the primary degeneration as occurring in the ganglion-cells of the anterior horns of the spinal cord, others, as Marie, and particularly Goldscheider, ¹¹⁴_{V. 23} find the initial starting-point of the affection in the vessels. The latter opinion now has many advocates. Redlich, of Vienna, ⁸_{Apr. 21, '94} showed, in the spinal cord of a child aged 5 months, dying after an illness of ten days, the symptoms of acute myelitis of the anterior horns; the process also extended into the cerebrum, and the peripheral nerves did not appear to be intact. Siemerling, of Tübingen, ³⁶⁸_{V. 26, No. 1} was also fortunate in having two rapidly-progressing cases under observation. In both cases he was able to recognize the type of acute myelitis, in which the anterior horns were principally involved. The marked affection of the vessels was noticeable throughout the disease, and particularly so in the region of the anterior arteria spinalis. Primary disease of the ganglion-cells does not appear admissible.

Dutil and Charcot, of Paris, ⁷³_{Mar. 17, '94} saw a case which would lend support to the opinion that poliomyelitis in adults presents a similar pathogenesis. A man, aged 56, otherwise healthy, became affected without any known cause with progressive paresis of the upper extremities (without any fever), extending over the trunk to the lower extremities; simultaneously there existed atrophy of the corresponding muscles, fibrillary twitching in several degeneration reactions. Death resulted from paralysis of the diaphragm. Pronounced degeneration of the anterior-horn cells was found post-mortem, particularly in the cervical and dorsal cord, together with highly-advanced endarteritic thickening of the vessels at these points; so that it might be possible to consider these

as the primary ones. Attention must be called to the fact that the anterior roots originating in the degenerated cells scarcely appeared altered.

If we start from the stand-point that anterior poliomyelitis is to be considered as an infectious disease of vascular origin, it might well be expected that the same process might at some time appear simultaneously in the brain and the spinal cord. Marie has stated that some fortunate chance would some time bring to notice a case in which cerebral infantile hemiplegia and spinal paralysis co-existed. Lamy, of Paris, ¹⁰⁹⁰_{June 15, '94} is now able to give the history and post-mortem results of such a case. Unfortunately, the rather incomplete accounts of the patient himself show that since early childhood he had been afflicted with atrophic paralysis of the right leg; he also frequently had convulsions. The intelligence was not fully developed. Death from intestinal cancer occurred in his forty-third year. At the autopsy there were found, in the left hemisphere, disseminated, old encephalic foci; the spinal cord, otherwise entirely normal, showed a considerable atrophy of the right anterior horn in the lower lumbar and sacral region and very marked atrophy of the corresponding anterior roots.

In this connection an observation by Dexler, of Vienna, ²⁰⁶⁷_{v.2} regarding comparative pathology may be mentioned. This author found in a dog a disseminated inflammation (in foci) of the brain, the spinal cord (the latter at many points analogous to that found in recent poliomyelitis), and several peripheral nerves. This was a process clearly referable to an infectious basis in the vessels.

In the treatment of loose joints resulting from infantile spinal paralysis, especially in the lower extremities, the arthrodesis first executed by Albert has been much recommended. The operation consists in first artificially obliterating the joint in question, and thus converting the entire extremity into a sort of stiff stilt, by which the power of walking is greatly facilitated. Karasiewicz ²⁰⁶⁸_{'94} mentions eighty-seven such operations, among them eight new ones.

SPASTIC SPINAL PARALYSIS.

The appearance of this disease in the adult may be looked upon as exceptional, and every published genuine case considered as important. Lewin, of Berlin, presented a patient at the Berlin Dermatological Society, December 5, 1893, who showed, following

syphilis, all the symptoms of spastic spinal paralysis; under a treatment of hydrargyrum oxycyanide decided improvement was noticeable.

T. Jones ¹⁰⁵_{Jan.1,'94} describes the case of a man, aged 35, who, eighteen months previously, without any known cause began to suffer from weakness of the lower extremities; at the time of his admission to the hospital this weakness was very pronounced. Rigidity, co-ordination disturbances, uncertainty in walking, and swaying motion while standing with closed eyes were all present. There were no disturbances of sensibility (pain in the back excepted), the sphincters remained intact, and there was augmentation of the patellar reflexes and of foot-clonus.

Brissaud, of Paris, ³_{Feb.24,'94} calls attention to the fact that undoubtedly spastic spinal paralysis in children (Little's disease) presents great symptomatic analogy with the adult form, but that both are to be strictly separated from one another. In the infantile form he includes those cases in which the symptoms of spastic paraplegia are noticeable soon after birth; all four extremities are involved, the lower ones to a greater degree; the spasmodic symptoms are more pronounced than those of paralysis. Cramps and disturbances of intelligence are absent in Little's disease, which is susceptible to decided improvement. It mostly occurs in prematurely-born children, and the author is of the opinion that the cause of the disease lies in the incomplete development of the pyramidal tracts at birth. Bruns, of Hanover, ⁷⁵_{May 16,'94} was able to demonstrate this defective development of the pyramidal tracts, as well as of Goll's columns, by means of preparations. He also describes another case, that of a prematurely-born (seventh month) female child; the latter is now $2\frac{1}{2}$ years old, and shows paraplegic rigidity of both legs, without actual paralysis; the paralysis becomes more pronounced as the child becomes excited; the patellar reflex is increased. The muscular apparatus of the trunk appears paralyzed, the tendency to spastic rigidity being also decidedly pronounced in the upper extremities. The intelligence is not materially affected, although the child learned to speak late. While Brissaud insists that Little's disease is not only to be distinguished from spastic spinal paralysis of the adult, but also from cerebral diplegia, Raymond, of Paris, ⁷³_{Jan.27, Feb.10,'94} is of opinion that Little's disease, paraplegia spastica, diplegia spastica

infantum, and athetosis duplex are in no manner distinct types of disease, but rather extend one into the other without any limit, and refers, in support of his opinion, to the statements of S. Freud, of Vienna, ²⁰⁷⁵_{'93} who does not admit of any distinct separation between these forms, neither from a clinical, etiological, nor anatomopathological stand-point. In another work Raymond ²⁰⁸⁴_{'92} opposes with great energy the idea that neither Little's disease nor spastic spinal paralysis in the adult are to be regarded as separate diseases with decided symptoms. He also lays greater weight than usual upon hereditary syphilis in the development of Little's disease, stating that if it usually occur in premature children the syphilis of the parents is a factor in the abortion.

Shewen, of Sydney, N. S. W., ²⁶⁷_{Mar. 15, '94} describes a case of successive but rapidly-appearing spastic contractions of almost all the muscles of the extremities, the abdomen, and of the back, with heightened tendon reflexes. Recovery took place after about one month. Köster, of Gothenburg, ²⁰⁷⁶_{Jan., '93} quotes the case of a man, aged 34, in whom the primary symptoms of the affection made their appearance after varioloid. He is of opinion that in some cases of spastic spinal paralysis the disease-type closely resembles that of syphilitic spinal paralysis.

ACUTE ASCENDING PARALYSIS (LANDRY'S).

According to the statements of Albu, ¹¹⁴_{v. 23, '94} various forms of this disease exist, deviating somewhat from the typical affection; in some of them the inflammatory myelitic character of the process, called by Gowers "acute ascending myelitis," is especially marked, and in others the peripheral-nerve symptoms are more prominent (polyneuritis ascendens acuta). He considers the infectious nature of the disease probable, as, for instance, after gonorrhœa. Gowers, of London, ¹⁰⁷⁷_{Dec. 20, '93} saw a young man, aged 19, in whom, following gonorrhœa, ascending paralysis of nearly all the muscles of the body occurred, ending in death after six days. The pronounced irregularity in the symmetrical appearance of the symptoms, the temporary augmentation of the patellar reflexes, a very large swelling over the right ankle, and other symptoms led Gowers to diagnose an acute inflammatory process in the medulla. The section showed characteristic signs of myelitis, most intense at the lower part of the dorsal region. The case of H. Félix ²⁴³_{Jan., '94}

was of a similar nature, but progressed much more rapidly. A soldier, 22 years of age, having had pneumonia and typhus several years previously, was attacked on February 9th by symptoms of mild bronchitis; on February 10th complete paraplegia of the lower extremities set in; sensibility, defecation, and voiding of urine remained normal; temperature, 39° C. (102.2° F.). On February 11th, in the morning, there was a sensation of heaviness in the upper extremities, and later on paralysis of the left arm, respiratory paralysis; death occurred at 10 o'clock in the evening. Section showed myelitic softening of the dorsal and cervical cords. De Sanctis⁵³⁷_{No. 18, '93} also quotes a case, rapidly ending in death, in which the sensibility and intelligence, as well as the functions of the bladder and rectum, had remained intact; even the electrical excitability appeared normal; while in the case of F. Savary Pearce, of Philadelphia,²⁴²_{Mar., '94} the presence of reaction of degeneration in various groups of muscles led to the diagnosis of polyneuritis, although the type of Landry's paralysis was presented by the case.

The case cited by Pribythoff, of Moscow,¹⁰⁹⁰_{Dec. 15, '93} of a female patient, aged 24, can also not be considered as a true type of Landry's paralysis, as during life there were present disturbances of sensibility (pains, then anæsthesia) and signs of degeneration as well, and the section showed a wide-spread parenchymatous neuritis affecting the nerves of the upper and lower extremities. The degeneration found in the nerve-fibres and cells in the spinal cord (by Marchi's method) may also be partially, if not entirely, referred to an extension of the process from the peripheral nerves through the roots into the spinal cord.

Jolly, of Berlin,⁴_{No. 12, '94} is convinced that the majority of cases of Landry's paralysis belong rather to polyneuritis (in his case, polyneuritis alcoholica). In some cases no anatomical changes are noticeable in the central nervous system, while in others acute myelitic or metencephalic disease may occasion these symptoms.

In a very carefully observed and microscopically examined case, Quizzetti, of Parma,⁵⁸⁹_{Apr. 2-4, '94} found diffuse, non-systematized alterations in the spinal cord, decreasing in intensity from the sacral region upward; the nerve-roots and peripheral nerves were partially degenerated, proportionately to the intensity of the degeneration in the spinal cord.

SCLEROSIS DISSEMINATA.

Basing himself upon the abundant material found in literature and upon three personal cases, E. W. Taylor, of Berlin,¹⁰⁰⁵_{v.5, No.1} attempts a thorough revision of the pathological anatomy of this affection. He concludes that there are no spots of predilection for the development of these foci in the central nervous system, as both the white and the gray matter may become affected; neither is the cortex of the cerebrum or of the cerebellum immune. He denies that disease of the vessels forms the basis of these sclerotic processes. Other observers, however, have reached the opposite conclusion, principally through the fact that they are in a position to study not only the fully-completed process of the foci-formation, but also the primary stages of the same in acute lethal cases; it is thus shown that the initial point of the foci always lies in the vessels. According to Popoff⁷⁵_{May 1, '94} the process extends from the diseased vessel, as a centre, in a peripheral direction, all the tissue surrounding the vessel being subject to the metamorphosis, though not all simultaneously; then the medullary sheaths succumb, and, later on, the axis-cylinders. The neuroglia-cells also disintegrate, but they do not proliferate, as was once the opinion. In the walls of the vessels the principal change consists of a cellular infiltration and subsequent thickening of the walls. At the same time there is an abundant emigration of leucocytes into the surrounding parts (particularly in subacute cases).

Moreover, regeneration of the axis-cylinders and vessels may also occur, which would entirely prevent the existence of a secondary degeneration. Williamson, of Manchester,⁹⁰_{Mar., '94} has observed a rapidly-fatal case, death occurring in twelve months. The foci in the spinal cord did not present any special features, but those in the cerebrum appeared to be of recent date and greatly resembled small cerebral foci of softening, which would also lead to the acceptance of their vascular origin.

A number of other observers consider that this disease is a myelitic affection of infectious nature, originating in the vascular system. Lebrun⁴⁵⁴_{Aug., '94} has collected 120 such cases, in which an infectious disease had preceded the affection (principally typhus and syphilis). Lent, of Rothstock,²⁰⁶²_{'94} has had similar results in 51 cases in the hospital at that place, and Moncorvo¹⁴⁷_{Sept., '93} emphasizes the relationship between this disease and syphilis.

MYELITIS.

As I have previously stated, it is exceedingly difficult to establish any fixed limit in considering the type of myelitis, as there are a number of distinctly characterized affections of the spinal cord (such as poliomyelitis, disseminated sclerosis, amyotrophic lateral sclerosis, etc.), which are each worthy of especial consideration, yet are nevertheless also to be regarded as certain special forms of myelitis. Oppenheim, of Berlin,²⁰⁷⁷₉₄ is of the opinion that it would be right to include all diffused and disseminated inflammatory and softening processes occurring in the spinal cord (with exception of the clinically peculiar form of sclerosis disseminata) under the head of myelitis. The most important cause of myelitis is infection, often following acute infectious diseases, the puerperal state, gonorrhœa, or putrid disease of the pelvic organs; it may also occur after vaccination, and is not infrequently referable to syphilis or tuberculosis; malaria and neoplasm cachexia may also be mentioned as predisposing causes. Of much less weight, though it must not be entirely set aside, is the etiological importance of cold, trauma, overexertion, emotion, and sexual excesses. Compression myelitis, of which the most frequent type is that occurring in tuberculous vertebral caries, is not classed under this head by Oppenheim; he considers that in spondylitis tuberculosa the constriction of the vertebral canal causes compression of the dural vessels and of the lymph-passages in the spinal meninges, which induces anæmia of the corresponding segment of the spinal cord and prolonged œdema due to obstruction; important alteration or softening of the nerve-substance can only occur at a much later period, and sometimes, as a final result, transverse myelitis is induced. Only in a very small number of cases is myelitis present from the beginning; in such, however, it is of a tuberculous nature.

Enriquez and Hallion, of Paris,¹⁰⁹⁰_{May 31, '94} have experimentally caused toxic myelitis in dogs by the injection of bouillon containing cultures of the bacilli of diphtheria. The fluid was filtered and injected into the subcutaneous cellular tissue. In the three dogs thus treated congestion and hæmorrhages in the spinal cord were found and in two pronounced myelitic foci, principally in the white matter. Of seven guinea-pigs to which tubercle cultures, alone or mixed with streptococci, were introduced into

the abdominal cavity in porous tubes, four showed, after a certain time, complete paraplegia of the posterior extremities, with atrophy. The post-mortem examinations made by S. Dessy, of Turin, ⁹⁹⁷ Mar. 16 '94 showed tuberculous meningitis throughout the entire spinal cord, slight hæmorrhages in the gray substance of the lumbar cord, as well as nerve-cells in process of atrophy; infiltration of the sheaths of the vessels and small tuberculous nodules in the gray matter of the anterior horns, and about the central canal in the dorso-lumbar portion of the cord. Of one hundred and fifty guinea-pigs into which the tubercle cultures were introduced directly into the abdomen, none showed medullary symptoms. In an extensive series of experimental researches Thoinot and Mas-selin ⁹² June 10, '94 were able to cause paraplegia and atrophy of the muscles by intra-venous injections of the bacterium coli and the streptococcus aureus. The condition of the spinal cord corresponded to that in acute myelitis; the vessels were, however, less affected than the nerve-cells and axis-cylinders.

Félix ²⁴³ No. 1, '94 saw death occur very suddenly in a case of acute infectious ascending myelitis. Deroye and Gallois ¹⁴ No. 10, '94 describe a case of acute ascending myelitis occurring after influenza. Küstermann, of Hamburg, ³⁶⁸ V. 26 also considers infection the cause of a case of acute disseminated myelitis carefully observed by him. Mehrer, of Snyatin, ⁸⁴ No. 45, '93 in a case ending in death within three days, could find no other cause for the disease than having taken cold. A noteworthy case of acute disseminated myelitis, with post-mortem results, is reported by S. Dreschfeld, of Manchester. ² June 2, '94

Th. Bain Whitton, of Reefton, New Zealand, ²⁶⁷ Oct. 15, '93 describes six cases of various forms of myelitis, two being acute, unilateral myelitis of the cervical cord. The first patient was a man, aged 63 years, in whom the disease set in after a cold and was only partially cured. The second patient was a woman who presented symptoms of semilateral myelitis after the birth of her first child. After the use of belladonna, ergotin, and mustard-plaster applied to the back, the affection almost entirely disappeared. The third case was one of chronic disseminated unilateral myelitis from overexertion, partial recovery taking place. The fourth case—acute disseminated myelitis following spinal concussion—ended in death on the sixth day; while the fifth—transverse lumbar myelitis caused by gout and alcoholism—terminated in death from

acute bed-sore and cystitis after thirteen days. In the sixth case, in which an autopsy was performed, there was hæmorrhagic myelitis from dislocation of the tenth dorsal vertebra, and death sixteen days after the injury from exhaustion due to the bed-sore and the cystitis. The same author ²⁶⁷_{Dec. 15, '93} cites two other cases later on: (1) of subacute dorsal myelitis from cold and exposure; (2) acute upper dorsal myelitis following spinal hæmorrhage, of traumatic origin, ending in death.

PARALYSIS AGITANS.

A. Fuchs, of Vienna, ¹¹⁴_{v. 25} observed, in nearly one-fourth of all the cases of paralysis agitans, an unnatural feeling of heat occurring in attacks, with increase in bodily temperature up to 39.5° C. (103° F.). Woodbury ²⁴²_{June, '94} noticed unusually severe contractions in an insane woman in whom the symptoms of paralysis agitans led to death within three months.

Rummo ²⁰⁷⁰_{'94} devotes considerable study to this disease, especially the incomplete forms. Therapeutically he recommends injections of from 0.001 to 0.003 gramme ($\frac{1}{64}$ to $\frac{1}{24}$ grain) of the arseniate of soda. The symptom of nystagmus noticed in a case of paralysis agitans by Clerici ⁶⁵⁵_{No. 6, p. 238, '93} is very rare.

The pathological anatomy of paralysis agitans has been recently, and most probably also definitely, established by F. Redlich, of Vienna. ²⁰⁶⁷_{v. 2} There is sclerosis of the supporting tissue, which is plainly perceptible in the ventral portion of the posterior columns.

SYRINGOMYELIA.

Now that the type of syringomyelia appears to be more clearly defined than that of many other diseases of the spinal cord, it is especially interesting to study cases which must be classed among the incomplete or abnormal forms. Rummo, of Naples, ²⁰⁷⁰_{'94} describes several such cases, in one of which there was a zone in the region of the perineum presenting a condition of anæsthesia for tactile and thermic, but not for pain-producing, irritations. Anæsthesia of the mucous membrane of the bladder and of the rectum was also present.

A large number of illustrative cases of more or less interest have been cited of late. In the case of J. B. Charcot, of Paris, ¹⁰⁹⁰_{May 15, '94} the patient, a woman, had for some time shown symptoms of

syringomyelia. After a fall, hydrarthrosis and luxation of the right shoulder-joint occurred. J. Peterson, of New York,¹ Sept. 23, '93 observed, in a woman with acromegaly, certain other symptoms (principally dissociation of sensibility in the left arm), which led him to suppose that syringomyelia was also present. Cases of Morvan's disease, without autopsy, are quoted by N. Pringle⁶⁹⁷ July, '93 and Eisenlohr, of Hamburg.⁶⁹ No. 25, '93

Loubovitch²⁰⁷⁸ V. 1, No. 2, '94 describes two cases of syringomyelia, of which the second may be regarded as initial and incomplete; besides the well-known disturbances of sensibility, scoliosis and ocular disturbances were the only other symptoms which made the correctness of the diagnosis probable. In the case of H. F. Müller,³²⁶ V. 52 a number of bulbar symptoms were noticeable,—nystagmus, right-sided paralysis of the abducens and paralytic contraction of the musculus rectus internus, facial paralysis of the right side, dissociation of sensibility in the region of both trigemini, paresis of the right side of the soft palate, paralysis of the recurrent laryngeal nerve on the right, difficulty in swallowing, and hemiatrophy and hemiparesis of the right half of the tongue. No pharyngeal reflexes.

Lorenti⁵⁸⁹ '94 noticed symmetrical gangrene of spinal origin after influenza, and supposes that the influenza virus had injured the nerve-cells of the lateral cornu. Eulenburg⁶⁹ Dec. 14, '93 is also of opinion that these cells are vasomotor secretory centres, and therefore refers the appearance of erythromelalgia to an alteration in them. Lewin and Benda, of Berlin,⁴ Nos. 3-6, '94 have made a study of the symptom of erythromelalgia. When fully developed it is characterized by redness, tumefaction, and the sensation of pain in the affected member. It is met with in organic affections of the central nervous system, as well as in functional central and peripheral diseases of the nervous system.

Neuberger, of Vienna,¹¹³ No. 12, '94 had under observation a man who, after syphilitic infection seven years previously, had from time to time eruptions and ulcerations over the entire body, which always rapidly disappeared under iodoform treatment. Later on the tongue and mucous membrane of the pharynx and larynx became similarly affected. An examination made shortly before the death of the patient showed total analgesia at various points of the body, while the tactile and thermal sense remained undisturbed. The

diagnosis of syringomyelia was confirmed by the autopsy, and it was afterward considered as probable that the symptoms affecting the skin and mucous membrane were not occasioned by the syphilis, but rather by the syringomyelia.

Marie, of Paris, ⁷⁶⁰_{May 26, '94} reports the case of a patient, aged 21 years, who had, besides the symptoms of syringomyelia, a considerable enlargement of the right hand and foot. Marie calls attention to the fact that in true acromegaly the extremities are symmetrically enlarged on both sides; in the pseudo-acromegaly of syringomyelia the hypertrophy is usually unilateral, and generally affects the hand and forearm. McConnell presented two cases of syringomyelia, at the Philadelphia Neurological Society, on January 22, 1894. In the second case the symptoms were limited exclusively to the right side of the body. F. X. Dercum, of Philadelphia, ²⁴²_{Mar., '94} cites a case, with autopsy, in which numbness of the fingers existed seventeen years before death. Von Targowla ⁴⁵²_{Nos. 4, 5, '94} describes a case of syringomyelia which had progressed in a rather atypical manner. The affection began with trophic disturbances, felons, and scoliosis; sensory disturbances only showed themselves at a much later period. The lesions of the joints preponderated. This was evidently an arthropathic syringomyelia. H. Fischer, of Hohenstein, ²⁰⁷²_{'94} cites a case in which muscular atrophy was entirely absent, and another in which he found the symptom just barely indicated.

M. Schmidt, of Dresden, ²⁰⁷⁹_{'94} mentions three cases of syringomyelia, one of which is interesting from the fact that the patient referred the beginning of the affection to a fall from a ladder, and thereupon brought a suit for damages. As, however, disturbances of sensibility were already present a few days after the fall (analgesia upon the incision of a phlegmon on the arm), it may be questioned whether the disease did not exist before the accident. The possibility of the causation of an acute symptom-complex, corresponding to that of syringomyelia, must be conceded; there would then exist the condition of traumatic hæmorrhage (probably in the posterior horns), which would, later on, lead to the anatomical type of syringomyelia. In the case above mentioned, however, the central gliosis probably existed before the fall, and the latter caused a hæmorrhage into the tissues of the glioma, thus aggravating the disease.

W. Hübler, of Munich, ²⁰⁸⁰₉₄ cites a case of Morvan's syringomyelitis. Other cases described are by Lunn, of London ²_{May 19, '94}; Charles A. Dana, ²⁴²_{Sept., '94} central glioma with numerous hæmorrhages into the spinal cord; Singer, ⁶⁵⁰_{No. 10, '94} a case of Morvan's type; Edgeworth, of Bristol ¹³¹_{Jan., '94}; and K. Pingen, of Geilrath, ²⁰⁷⁹_{'93} seven cases, three with autopsy. The arthropathies of syringomyelia have been the subject of articles by Sonnenburg, ⁴_{Nov. 27, '93} Sokoloff, ³⁰¹_{V. 34, Nos. 1, 2} and Londe and Perry. ⁴⁵²_{July to Oct., '94}

Düring, of Constantinople, ⁶⁹_{No. 6, '94} writes as follows concerning the relationship between leprosy and syringomyelitis: 1. Many cases which were at first supposed to be syringomyelitis, or Morvan's disease, finally prove to be leprosy. 2. As leprosy has been proven to have survived in France (Brittany) and Germany, the fact that the patient has never been exposed to leprosy is of no diagnostic value. 3. As the detection of the leprosy bacillus is often possible only late, and often impossible in undoubted cases, the failure to find the bacillus is not of value as a point in differential diagnosis. 4. The assumption that the nervous symptoms of leprosy are of purely peripheral origin is unfounded and opposed to clinical observation. The same conclusions upon this subject are given verbatim by P. S. de Magalhaes, of Rio de Janeiro. ⁶⁴²_{May, '94}

Prus, of Lemberg, ⁵⁶⁹_{Nos. 48-52, '93} is of the opinion that, while not all cases of syringomyelia are to be pronounced as leprosy, at least all those of Morvan's type should be. Tedeschi having shown that the lepra bacilli find a favorable field for development in the nerve-centres, Prus considers that the bacilli migrate into the spinal cord, along the nerves, and that they may there cause proliferation of neuroglia; afterward, through disintegration, the syringomyelitic cavities may be produced. He himself observed a case of leprosy (the first in the province of Galitzia) in a Jewish woman, aged 46, which showed great analogy to syringomyelia; the lepra bacilli were found in the blood.

Weintraud, of Strassburg, ¹⁰⁰⁵_{V. 5, No. 6} saw two cases of syringomyelia with isolated unilateral paralysis of the posterior cricoarytenoid muscle. In paralyzes of the larynx, whether they be developed peripherally or centrally, the abductors are usually primarily affected. Posterior paralysis first occurs, but the total recurrent paralysis soon follows. These two cases are of interest because

the condition remained one of true posterior paralysis, while at the same time there was unilateral atrophy of the cucullaris. It must therefore be supposed that the nuclear region of the nervus accessorius must have been unilaterally more extensively destroyed by the neuroglial proliferation. Moreover, Schlesinger, of Vienna,⁷⁵ Oct. 16, '93 was able to demonstrate the existence of laryngeal disturbances in a considerable percentage of his cases of syringomyelia, and he is of the opinion that bulbar symptoms occur much more frequently in this disease than is generally supposed. He will fully prove his statement in his very comprehensive work, which is shortly to appear.

In a number of cases syringomyelia was diagnosed during the life-time of the patient, while the post-mortem disclosed another affection. Ch. Pott, of Philadelphia,²⁴² No. 4, '94 describes a case with atrophy of the arms, spastic condition of both legs, increased knee-jerk, loss of temperature- and pain- sense, and preservation of the sense of touch; the patient never complained of any pain. Post-mortem examination revealed no central lesion of the cord, but cervical pachymeningitis. In the case cited by Beever, of London,² Nov. 18, '93 a syphilitic tumor was found on each side of the cervical enlargement.

Lloyd²⁴² June, '94 and Brissaud¹¹⁵³ July 21, '94 again advance the theory that cervical hypertrophic pachymeningitis may give rise to symptoms of syringomyelia in the upper portion of the spinal cord. In the case observed by J. M. H. Brown,¹⁹² June, '94 in which the patient was a woman 50 years old, the symptoms of syringomyelia were so completely overshadowed by those of the simultaneously-existing progressive dementia paralytica that they were only discovered at the autopsy.

From observations made in four personal cases, Homèn³⁷¹ V. 4, No. 1 refers the development of the syringomyelitic alterations in the spinal cord to anomalies in the embryonic state, particularly congenital hydromyelia, from which results a predisposition to a disease process which might be regarded as a primary gliosis.

With regard to the genesis of syringomyelia, it is accepted by many that the disease arises from a primary glioma, the advanced stage of cavity-formation not being necessarily present. W. Gerlach, of Pottawa,¹⁰⁰⁵ V. 5, No. 4, 5 rightfully combats such a one-sided opinion. His idea is peculiar,—i.e., that the connective-tissue-

like mass forming the wall of the cavity is none other than a portion of the pia mater, which, during the period of foetal development, penetrated into the pathological lumen of the spinal cord. It is especially worthy of notice that in the case described by Gerlach there was found in the upper cervical cord, in the region of the posterior commissure, a small teratoma provided with tendon, cartilage, muscle, and other tissues. Various causes may induce the development of a pathological cavity in the spinal cord. Some cases in which gliosis exists may, as has been proven by Brissaud, of Paris, ¹⁰⁹⁰_{Oct. 15, '93} serve for the fuller comprehension of the structure of the normal neuroglia. He shows all the changes from the normal central canal to the formation of large syringomyelitic cavities, and proves that in such cases it is simply a question of a quantitative difference in certain transformation processes in those cells which are always present in the region of the central canal, and which may be regarded as ependyma-cells.

HÆMATOMYELIA.

Minor, of Moscow, ¹⁰⁹⁰_{Apr. 15, '94} had occasion to observe three new cases in which he suspected spinal hæmorrhage, although in the third case there had been no trauma. He particularly calls attention to the fact that hæmatomyelia may present the symptom-complex of syringomyelia, and be thus eventually confounded with the latter. Schlesinger, of Vienna, ²⁰⁶⁷_{v. 2} very carefully examined the spinal cord of a dog having had, after a very slight trauma, a diffused meningeal hæmorrhage and also an intra-medullary tubular hæmorrhage. The latter was throughout restricted to the gray and white matter behind the central canal. This fact demonstrates that the longitudinal course of the hæmorrhage is owing to the loose, spongy texture of the substance of the spinal cord, and not, as may have been inferred from our experience in man, to propagation in consequence of gravitation; for, in this case of the dog, the hæmorrhage, if it were a question of gravitation, should have penetrated into the anterior horns, and particularly into that portion of the spinal cord situated in front of the central canal.

Stembo, of Wilna, ²¹_{Apr. 21, '94} and Shiwage, of Moscow, ²¹_{Aug. 11, '94} quote two cases of traumatic hæmatomyelia. The former again emphasizes the fact that, owing to the usual central location of the hæmorrhage, the symptoms may closely resemble those of syringo-

myelia. I. Van Gieson, at a meeting of the New York Neurological Society, May 1, 1894, called attention to the fact that, in cases of acute myelitis, there are occasionally found in the spinal cord peculiar necrotic foci; these may be at a considerable distance from the myelitic focus, and generally extend over a greater length of the spinal cord. They are caused by hæmorrhage. He suggests the name of "hæmatomyeloporos" for such foci.

TUMORS OF THE SPINAL CANAL.

Since tumors of the vertebral canal but seldom originate in the spinal cord itself, such as do would naturally be of particular interest. Two such cases are described by A. Schiff, of Vienna ²⁰⁶⁷_{v.2,'94}: The first tumor was situated in the anterior horn of the cervical cord in a tabetic patient, who also presented extensive atrophy upon the corresponding upper extremity. One would certainly be inclined to accept an existing relation between the tumor and the atrophy, yet this is again rendered very doubtful when we consider that the tumor (sarcoma) did not even measure one millimetre at its greatest length. The other tumor was a caseating tubercle having a diameter of about half a centimetre, located in the right cervical cord. As the tumor had substituted the nerve-substance in such a fashion that the spinal cord at this point was only almost imperceptibly enlarged, and while, outside of the symptoms of caries of the thoracic vertebral column, no other symptoms were present during life which would lead to the inference of an affection of the cervical cord, the tumor was at first not noticed at the autopsy, but was only found upon very careful examination of the spinal cord later on.

Arnozan, of Bordeaux, ¹⁸⁸_{Mar.11,'94} found a true intra-medullary tumor, of the size of a hazel-nut, above the lumbar cord, in a man who had for a long time suffered from complete paraplegia and anæsthesia, extending as far as the navel. Above this there was an hyperæsthetic zone.

Several cases of extra-medullary tumors are worthy of mention. Bruns, of Hanover, ⁷⁵_{May 1,'94} observed a young man who had, during the last half-year, been three times operated upon for tumors in different portions of the body. On April 10th pains were felt in the region of the third left dorsal nerves; two days later there was paralysis of the legs, the trunk, the bladder, and rectum; later on

also anæsthesia as far as the fourth dorsal nerves, above these hyperæsthesia; on April 24th pains in the region of both ulnar nerves; decubitus. A tumor in the upper dorsal cord was diagnosed and the operation performed, but it was impossible to remove the entire tumor, which extended from the second to the sixth dorsal nerves; the spinal cord was also greatly compressed. The patient died ten hours after the operation.

Hydatid cysts of the vertebral canal are very rare, perhaps four cases of cysticerci and thirty of echinococci having been recorded up to date. A. Souques⁷_{No.23,'93} saw a case of the latter kind in a young girl aged 15 years. From his account of all the cases so far described, it is shown that echinococci of the vertebral canal are usually located upon the posterior surface of the spinal cord; among twenty-eight cases they were only five times situated within the dura mater. Friedeberg³¹⁹_{No.51,'93} found hydatid cysts in the vertebral canal outside of the dura, from the sacrum to the second dorsal vertebra, which in the lumbar region had compressed the cord into a narrow band.

Westphal⁴¹_{June 29,'94} saw a sarcoma of the spinal meninges extending over the entire length of the cord, but largest in the lumbar region. W. Ransom and T. Thomson²_{Feb.24,'94} observed compression of the dorsal cord through a sarcoma, originating in the extradural adipose tissue. Operation was attended with fatal result.

McVail and Workman, of Glasgow,²¹³_{Mar., '94} describe a tuberculous accumulation, three inches long and one-half inch thick, on the outer side of the spinal dura mater; also a second case in which a sarcoma of the soft spinal meninges had greatly injured the medulla.

Turney and Clutton⁶_{Feb.17,'94} and Ferrier and Cheyne⁶_{Mar.24,'94} have endeavored to remove intra-vertebral tumors by operative measures, but with unfavorable results. The excellent work of Chipault²⁰⁸¹ should be here called to mind. Jos. Smits, of Atjeh, Sumatra,⁴⁰⁴_{No.104} gives a short *résumé* of the surgery of the spinal cord.

TRAUMATIC AFFECTIONS OF THE SPINAL CORD.

Among the published cases of Brown-Séquard's semilateral lesion of the spinal cord, that of Herhold⁶⁹_{Jan.4,'94} is noteworthy, owing to the fact that the characteristic symptoms of this lesion still exist in all their clearness, twenty-five years after the injury.

Erhlich, of Vienna, ⁸_{No. 50, '93} noticed, after a stab in the region of the seventh thoracic vertebra, the following conditions: Complete paralysis of the left leg; diminished strength of the right; bilateral, enormously-augmented reflexes; in the left lower extremity the sensibility in regard to touch and pain was slightly diminished, while that of pressure and conception of posture was very much so; on the right all sensibility had disappeared. After several months the sensibility on the left side was again normal, the conception of posture alone being impaired. Hentschel ²⁰⁸²_{'94} found, in seven such cases, more or less numerous renal calculi. Tunnicliffe, of London, ⁴⁷_{P. 63, '94} has noticed a case of fracture of the vertebra with total anæsthesia below the lesion; it may be mentioned that there was no perspiration in the anæsthetic region, while in the sensitive region it was very profuse. In White's patient, ⁴⁷_{P. 63, '94} who had bilateral compression of the cord from the sides, owing to tuberculous disease of the vertebra, the pain and temperature sensibility were absent, while the muscular sense and that of touch remained intact.

Hulke, of London, ⁶_{Mar. 17, '94} saw a man who, after a fall on his back, suffered from paraplegia and anæsthesia of both legs. While the former symptom soon disappeared, the anæsthesia still existed a year later.

It is generally accepted that, after injury of the spinal cord, the reflexes under the lesion are augmented, and that the secondary degeneration of the pyramidal tracts is expressed by the contracture of the corresponding muscle groups. It has long been known that for the injuries occurring in the upper portion of the spinal cord this does not always hold good (Sternberg, ²⁰⁸³_{'93}); but the number of cases which unmistakably illustrate this is very small.

Bruns, of Hanover, ³⁶⁸_{V. 25} describes in detail a case of total traumatic destruction of the spinal cord upon the boundary between the cervical and dorsal cord. The case was observed during a period of four months, permanent numbness of the lower extremities, loss of patellar reflexes, and paralysis of the bladder and rectum being present. This is probably the first case of the kind in which the entire medulla spinalis, the nerve-roots, as well as a number of nerves and muscles have been subjected to an exact microscopical examination. Gussenbauer, of Prague, ⁸⁸_{Nov. 40, 41, '93} considers that in con-

cussion of the spine the blood-extravasated lesion of the spinal cord is the true cause of the spinal symptoms, and that the degree and extensiveness of this hæmorrhage determine the result of traumatic myelitis with all its further developments, or of a *restitutio ad integrum*. On the other hand, the interesting experiments of Bikeles, of Vienna, ⁶⁸ Aug., '94 demonstrate that after traumatisms of the vertebra many spinal symptoms may appear without hæmorrhage into the cord. The anatomical basis for such a traumatic neurosis could, however, only be clearly demonstrated with the aid of the Marchi osmium stain. There was then shown—and this at a great distance from the point of the traumatic influence—a diffuse degeneration of the nerve-fibres of the cord, next involving the medullary sheath, and which might under certain circumstances favor the receding of the symptoms.

Lewis A. Sayre ¹ Jan. 10, '94 has witnessed in a number of cases of railway spine, with paralysis of long duration (in one case over two years), a marked improvement in the condition after the use of the suspension treatment. In every case when the spine was stretched the patients said that they felt better, that they had more control of their limbs, and that sensation was keener. All the cases continued to feel this improvement so long as they were properly sustained by suitably-fitting plaster-of-Paris jackets.

DISEASES OF THE SPINAL MENINGES.

The case of hypertrophic tuberculous pachymeningitis observed by Vandervelde and le Boeuf ⁸⁶⁸ Apr. 7, '94 is interesting from several points; the fact that the thickening of the spinal dura mater did not take place as usual in the cervical region, but in the upper dorsal cord, and the very rapid course of the disease (six months) are worthy of mention.

Lamy ⁴⁵² No. 4, '94 refers to a case of hypertrophic cervical pachymeningitis which presented a great analogy to the typical form of Charcot and Joffroy, but is referable to syphilis, as corroborated by many circumstances,—not alone the fact that the patient admitted having had syphilis, but the presence of various cerebral symptoms as well, especially paralysis of both abducens nerves. Witting ⁷⁶⁸ v. 13, No. 3 questions, from the anatomico-pathological stand-point, how far a specific infection (tuberculosis or syphilis) may contribute to the development of hypertrophic pachymeningitis.

SPINAL REFLEXES.

Hitzig, of Halle, ³⁶⁸_{v.2, No.2} saw a patient who had sustained an almost complete transverse rupture of the spinal cord at the boundary between the cervical and dorsal cord. The patient suffered for eleven years after the trauma; the tendon reflexes were absent in the lower extremities up to the time of death; electrical excitability persisted, but was somewhat diminished. The statement of Bastian, who was the first to indicate decisively that complete transverse rupture of the spinal cord entirely annuls the deep reflexes, is thus confirmed, although the experiments on frogs by Setchenow would seem to prove the contrary. In this connection E. S. Reynolds, of Manchester, ⁹⁰_{May, '94} calls attention to the following point: When we have the pathological condition of total transverse division of the cord, we have undoubtedly the clinical condition of total motor and sensory paralysis; but the converse does not by any means necessarily follow, and certainly the two statements cannot be used as convertible terms in relation to the loss of the reflexes. Thus, with total motor and sensory paraplegia, heightened reflexes may exist; the paraplegia is, however, not occasioned by transverse division of the spinal cord.

Attention is directed by Rachford, of Newport, ¹_{Aug.4, '94} to the heightened spinal reflex irritability which may be occasioned in children by defective nutrition, in which condition the state of the circulation must be carefully observed. The three important changes in the blood to be considered in this connection, are: (1) toxins in the blood; (2) anæmia, acute and chronic; (3) venous congestion, acute and chronic.

In a patient with syringomyelia and pseudo-acromegaly, presented by Marie, of Paris, ¹⁴_{Apr.15, '94} and whose case has already been mentioned under "Syringomyelia," a very peculiar condition of the patellar reflexes existed. The reflex was exaggerated on the right and abolished on the left. If the left patellar tendon were struck, no movement of extension was produced, but a very distinct movement of adduction of the right thigh by contraction of the adductors followed. This contra-lateral adduction of the thigh can be seen in many healthy subjects with normal patellar reflex. It proves, in this case, that the knee-phenomenon actually is a reflex, and that in the patient in question the centripetal tracts of the reflex circle had not been destroyed. Hinsdale and

J. Madison Taylor, of Philadelphia, ²⁴²_{Oct., '93} have also called attention to the same symptom, under the name of "crossed knee-jerk." The best method for eliciting this movement is by seating the patient comfortably in a chair, with the body erect and the knees ten or twelve inches apart at a rather obtuse angle, the feet being advanced a few inches. They found this symptom in several healthy persons and in 30 to 40 per cent. of nervous patients. In all locomotor ataxics with absent knee-jerk the crossed knee-jerk is also absent. A general and synoptical review of the reflexes is given by Jendrassik, of Pesth. ³²⁶_{V. 52}

L. Zander, of Berlin, ²⁰⁷²_{'94} tested the patellar reflexes in 331 patients (excepting those having organic diseases of the nervous system). In 5 cases (1.5 per cent.) the reflex was not discernible, the causes for its absence being various; 270 patients (81.6 per cent.) presented a qualitatively unchanged patellar reflex; quantitatively the spasmodic contractions were normal in 148, while in 122 they were more or less heightened. In the third group there were 56 patients (16.9 per cent.) who showed reflexes qualitatively altered, in the majority of cases also quantitatively heightened. The deviations from the normal type varied from simple clonus of the leg to the highest degree of clonic spasm of the entire muscular system, even with psychical alterations. To this group belonged the neurasthenic or hysterical patients. Gowers ¹⁰⁷⁷_{Oct. 4, '93} is convinced that the patellar reflex is never absent in healthy persons, but only when there is some structural disease of the muscular or nervous system.

SPINAL LOCALIZATION.

Successful experiments have been made of late to determine the separate segments of the spinal cord, as well as the various roots of the spinal cord. The principal works elucidating the subject are those of Head, ⁴⁷_{Nos. 63, 67} Allen Starr, of New York, ⁴⁷_{No. 67} and W. Thorburn. ⁴⁷_{No. 64} The sensory conditions were those most comprehensively considered, and several important facts have been brought to light. Thorburn states that in injuries of the nerve-roots the symptoms with regard to the sensibility of the skin show a much less sharply circumscribed limit than when a segment of the spinal cord becomes diseased,—i.e., that cord anæsthesia (segmental anæsthesia) has a sharper boundary-line than root anæsthesia. With regard to the nerve-roots Sherrington has

already demonstrated that every portion of the skin is, in reality, supplied by three roots, inasmuch as the region of each separate root is also supplied by the branch-ends of the next upper as well as the next lower one. It is thus made clear that injury of one nerve-root does not usually cause anæsthesia, and that, on the contrary, three roots must have been injured in order to induce complete anæsthesia of a certain portion of the skin. Horsley and Gowers have also called attention to another fact, namely, that in a transverse lesion of the spinal cord the band of anæsthesia about the body was uniformly at a level from two to four inches lower than the level of the lesion in the cord. This fact of collateral supply of skin by adjacent nerves is of great practical importance in determining the position of a lesion in the cord, such as a tumor. With regard to the topographical position of the separate segments of the spinal cord, there are decided individual differences of opinion. Allen Starr has examined a number of bodies with the object of investigating the cervical portion of the cord, and also refers to a schematic report upon this subject by Reid. It would appear therefrom that, upon fracture of the seventh cervical vertebra, either the eighth cervical segment, the third dorsal segment, or those situated between them may be destroyed.

As to the distribution of anæsthesia in the lesions of cervical enlargement of the spinal cord, it is possible to produce a schematic diagram, such as is here presented, demonstrating the areas of skin upon the arm which are related to the various segments of the cord between the second dorsal and the fourth cervical. (Fig. 1.) The symptoms arising from the side of the centrum ciliospinale, to which attention has been directed by Klumpke, must not be forgotten, which symptoms, according to

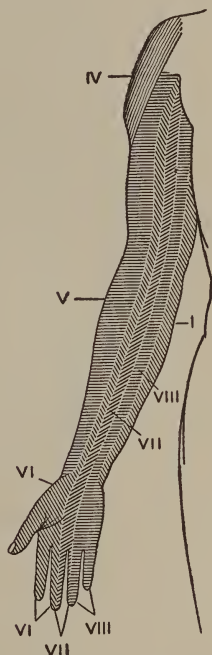


FIG. 1.—LOCAL ANÆSTHESIA AS A GUIDE IN THE DIAGNOSIS OF LESIONS OF THE SPINAL CORD. (STARR.)

Brain.

the aforementioned authors, only appear in lesions of the first dorsal segment or its roots, but not of the nerve-roots originating in the spinal canal. The symptoms alluded to are myosis, with sluggish reaction of the pupil both to light and accommodation; a decided narrowing of the palpebral fissure, and a slight retraction of the eyeball. These symptoms are very easily overlooked if they are present upon both sides.

As far as the motor functions of the various cervical segments are concerned, Allen Starr agrees that each muscle has its primary ganglion in several (two or three) segments of the cord. Disease of a single segment does not usually entirely paralyze the corresponding muscle. He thus contradicts the views of Thorburn and Collins,¹_{Jan. 18, 27, '94} who consider that the ganglion of a single muscle is only to be found in one individual segment. Thus, for example, the nerves for the musculus biceps would arise in the fourth, fifth, and sixth cervical segments, for the musculus triceps in the sixth and seventh cervical segments. Collins accepts as the nerves of the plexus brachialis three principal groups of nerve-cells extending from the upper edge of the fourth cervical segment to the lower edge of the first dorsal segment. The upper group should be for the shoulder and upper arm and the lower arm and hand. The ganglia for the flexors, he considers, lie farther outside and deeper than those for the extensors. The muscles of the back have their primary cells in the interior of the anterior horn. For the nerve-roots having their origin in the lumbar and sacral region (not for the segments themselves) Thorburn presents the adjoining schema (Figs. 2 and 3), which in several respects does not, however, correspond with that given by Starr.

Valentini¹¹⁴_{V. 22} has attempted the clinical differentiation of the diseases of the lower portion of the spinal cord and those of the cauda equina. If the disease extend downward from the second lumbar vertebra, only the root-fibres of the cauda equina are involved, and this in such a manner that the third lumbar nerve, which supplies the muscular system of the obturator crural nerve, together with the sensory regions belonging thereto, remains intact. If, however, the contents of the vertebral canal at the height of the first lumbar nerve are injured, the cord and nerve-roots will be affected, and complete motor and sensory paraplegia of the lower extremities result. Schultze, of Bonn,¹⁰⁰⁵_{V. 5, Nos. 2, 3} demon-

strates that this distinction holds good in many cases, though not in all. In a case of fracture of the twelfth thoracic and first lumbar vertebræ, he observed that they only projected into the central portion of the vertebral canal, thereby compressing the

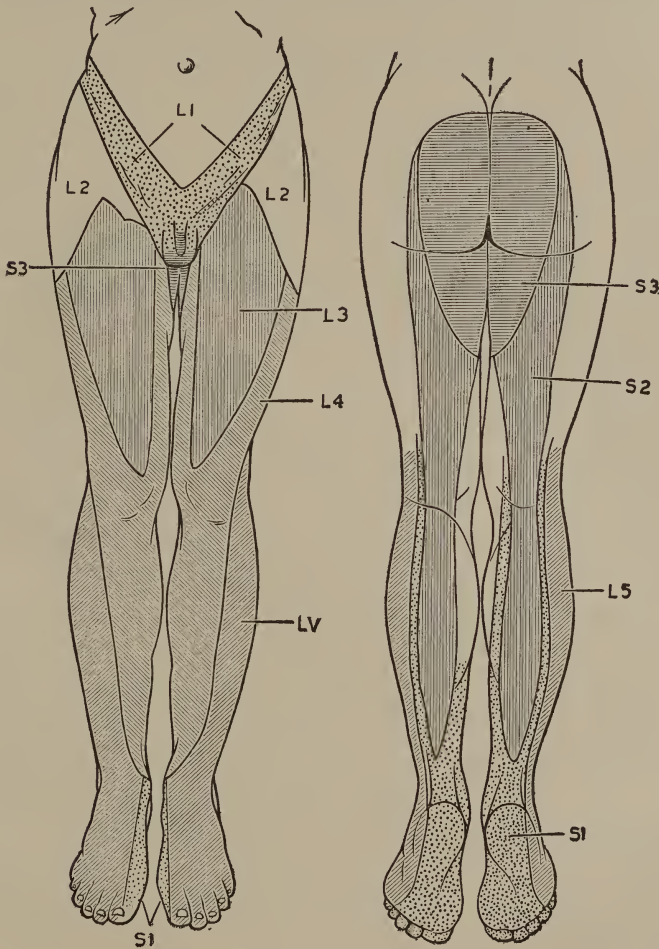


FIG. 2.

FIG. 3.

SENSORY DISTRIBUTION OF SPINAL NERVES. (THORBURN.)

FIG. 2.—L1, first lumbar; L2, second lumbar, etc.; S1, first sacral, etc.

FIG. 3.—L4, fourth lumbar, etc.; S1, first sacral, etc.

Brain.

spinal cord; while the side portions, in which the nerve-roots and also the third lumbar nerve are located, were not affected. The symptoms observed, therefore, depend, in cases in which the region of the first lumbar nerve is diseased, upon the greater or

lesser transverse extension of the original lesion. According to Schultze, a differential indication may be found in the occurrence of fibrillary twitchings, which, in the case of true root disease, are usually absent, thus showing that the cord itself is injured.

A case of intra-meningeal hæmorrhage in the region of the cauda equina, following trauma, is reported by Herman Gordinier, of Troy. ⁹_{Apr. 14, '94} Decided improvement occurred after six months. The very exact and important investigations by Head concerning the regions of the single spinal-cord segments, and the very interesting relations which, according to Head, certain of these segments have with the sensory nerves of the viscera, must be mentioned here. The question as to the portion of the transverse section of the spinal cord in which the tracts for the various qualities of sensation are to be found is still a mooted one. A widely-accepted opinion is that the tracts for the touch and the muscular sense follow their course in the posterior columns, while those for pain and temperature sensations take their way through the lateral columns. W. Hale White ⁴⁷_{Autumn, '93} observed a case which, in general, confirms this opinion. The spinal cord was compressed on both sides at the level of the eighth dorsal nerves, in consequence of caries of the vertebra, while the posterior column remained almost intact. In the lower half of the body pain and temperature sensibility were destroyed, while the tactile and muscular sense remained; with regard to the tactile sense, however, certain peculiarities presented themselves which were not readily explainable according to the above-mentioned hypothesis,—the inability to tell silk from velvet; the wide separation of the compasses necessary before the points were distinguished as two.

R. Oddi ³⁷⁶_{No. 2, '94} was able to find a centre for the sphincter chole-dochi in the region of the first lumbar nerve, performing its functions in a similar manner to the centres for the sphincter ani and the sphincter vesicæ.

Bayliss and Starling ¹⁷⁸_{v. 17} attempted to demonstrate, in the dog, the manner in which the vaso-constrictors for the portal vein leave the spinal cord. They found that these tracts were principally to be looked for in the fifth to the ninth dorsal nerves; some of the fibres belonging thereto are, however, found as high up as the third and some as low as the eleventh dorsal nerves.

PERIPHERAL NERVOUS DISEASES, MUSCULAR DYSTROPHIES, AND GENERAL NEUROSES.

By PAUL SOLLIER, M.D.,

PARIS.

ACROMEGALY.

EVERY year a certain number of new cases of acromegaly and of Marie's disease are recorded. Middleton ²¹³_{June, '94} reports a case, interesting on account of the great deformity of the wrists, trophic lesions of the joints, and the presence of a certain degree of atrophy of the muscles of the hand, analogous to that found in the progressive atrophy of Duchenne. There were, besides, slight symptoms of Râynaud's disease and some traces of albumin in the urine. Dreschfeld, of Manchester, ²_{Jan. 6, '94} presented a patient, aged 30 years, who five years ago began to show signs of acromegaly. There was atrophy of both optic discs, with complete blindness of one eye and diminished vision, but no hemianopsia of the other. The thyroid could not be felt. Lavielle, of Bordeaux, ¹⁸⁸_{Jan. 7, '94} cites a case which presented certain features resembling those occurring in hypertrophic pneumatic osteo-arthritis,—an affection also described by Pierre Marie. Ralph Parsons, ¹_{Jan. 20, '94} Valat, ¹⁰⁰_{Nov. 9, '93} Moyer, ⁴⁵¹_{Feb., '94} and L. Linsmayer ³¹⁹_{Aug. 25, '94} have also published cases of classical acromegaly.

H. Pershing ⁴⁵¹_{June, '94} reports a case in which the symptoms led him to suppose hypertrophy of the pituitary body. Bonardi ¹²⁶_{Jan. 15, '94} cites cases of acromegaly in a father and son. In the latter, a tumor of the pituitary body was found at the autopsy, together with generalized endarteritis and sclerotic atrophy of the thyroid gland. Autopsies are still rare. T. Coke Squance, ²_{Nov. 4, '93} in a certain case, met with hypertrophy of the pituitary body and persistence of the thymus; the thyroid gland was enlarged and weighed nearly two ounces. Arnold ¹³_{June, '94} found, in the case of a female patient, hypertrophy of the pituitary body and consecutive alterations of the optic nerves. The dermal and subcutaneous

connective tissues were hypertrophied, the walls of the arterioles thickened. There was hyperostosis of the cranium, with exostosis and synostosis. The costal cartilages were partially ossified. The periosteum was thickened throughout. At the articular extremities there was atrophy of the cartilage and of the osteophytes. The spinal and rachidian ganglia were poor in nerve-cells.

F. Peterson, of New York, ⁵⁹_{Sept. 23, '93} has met with acromegaly associated with syringomyelitis. The patient died, but, unfortunately, no autopsy was possible. Caton and Paul, of Liverpool, ²_{Dec. 30, '93} operated upon a woman who, after having presented symptoms of acromegaly, had all the indications of a tumor at the base of the cranium. Paul made a large opening at the level of the temporal fossa, incised the dura mater, and recognized the intercranial tension as being far beyond the normal. After apparently good results the patient died. At the autopsy a large tumefaction of the pituitary body was found. The histological examination showed a sarcoma with embryonic cells. Solomon Solis-Cohen, of Philadelphia, ¹⁹_{May 26, '94} treated a case of acromegaly with desiccated thyroid gland, with good results.

The relations existing between gigantism and acromegaly have not yet been determined. Many acromegalic patients are giants. Dana, of New York, ²⁴²_{Nov., '93} reports a case in a man six feet and seven inches in height, the autopsy revealing hypertrophy of the pituitary gland. Dana asks whether certain cases of gigantism are not special forms of acromegaly, and cites another case of true gigantism,—height, 7 feet 4 inches,—in which there was hemihypertrophy of the face, on the left side. This is a rare combination, being only the eleventh case known. Byrom Bramwell ³⁶_{Jan., '94} also describes a case of acromegaly in a giantess.

Sirena, of Palermo, ³¹_{July 18, '94} performed an autopsy upon a giant from Egypt who died of parenchymatous nephritis. The bones showed exostoses and diffuse porous osteoperiostitis. Fritsch and Klebs ²¹⁴_{p. 662, '93} made an autopsy on a German giant who had not begun to grow abnormally before the age of 36. In both cases there was acquired gigantism, which is the most common form. It would seem that gigantism, as well as dwarfism, arises from a disease occasioning disturbances of growth, and that, owing to the osseous lesions frequently present, there is a certain analogy with acromegaly. Unilateral hypertrophy of the face is, as has

already been stated, of rare occurrence. S. Boyd ⁴⁵¹_{Nov., '33} cites a very interesting case occurring in a young lad in whom the face alone was affected, and not the cranium. The tongue was also hypertrophied on the left side. Thomas Morton, of Philadelphia, ¹⁹_{Feb. 24, '94} reports two cases of congenital hypertrophy,—one of the right index and middle fingers in a child of 18 months, and the other, of the forearm and hand, in a child of 22 months. Shoemaker, of Philadelphia, ¹⁹_{Feb. 24, '94} cites another case in which there was congenital hypertrophy of two-thirds of the left foot. McGregor, of Glasgow, ²¹³_{Mar., '94} describes a case of hemihypertrophy of the body in a boy of 10 years. The face and the cranium did not take part in the hypertrophied condition. The author is of opinion that the affection was due to a trophic disease of the nerves, probably congenital, and that the primordial seat of the modification was to be found in the trophic centres of the brain. A report of the Children's Hospital at Stettin contains ³⁶⁶_{Aug. 6, '94} a case of congenital hemihypertrophy of the right side of the body. At the autopsy nothing of importance was found with regard to the muscles and nerves.

MUSCLES.

Muscular Atrophy.—George Jacoby ¹_{Mar. 24, '94} presents a case of muscular atrophy in a little girl of 12 years whose father had been refused admission into the army on account of muscular weakness. Weakness and atrophy of one leg was noticed at the age of 4, and one year later the other became affected. There was asymmetry of the buttocks and pronounced lordosis. The arms were unaffected. The reflexes existed, but there were fibrillary twitchings. Jacoby, while regarding this case as an example of muscular atrophy of the peroneal type, states that it is not entirely typical, owing to the asymmetry of the atrophy, which, though bilateral, had attacked the thigh on one side and the leg on the other. Ceconi ⁵⁸⁹_{Mar. 21, '94} reports an interesting case of a malady in which appeared and disappeared, in a contemporaneous fashion, a series of symptoms usually considered as characteristic of various forms of progressive muscular atrophy. In the beginning there was fever, which gradually augmented and as gradually diminished during a period of fifteen to twenty days. During the later days there was also rachidian pain and a sensation of extreme weakness of all the muscles. The latter symptom persisted and

then rapid changes in the articulation of words occurred, with pains throughout the right leg, which lasted about three months. A year and a half later the patient was unable to do any work on account of the great muscular weakness, and there was evident atrophy and hypertrophy of certain groups of muscles. In several there was degeneration reaction, and in others sensible diminution of galvano-faradic excitability, difficult articulation, and exaggeration of reflexes. There were therefore present, simultaneously, symptoms of myopathic and myelopathic muscular atrophy, as well as of bulbar paralysis and amyotrophic lateral sclerosis.

Wiener and Collins ¹_{Apr. 22, '94} each present two cases of muscular atrophy: one showed the typical features of amyotrophic lateral sclerosis, namely, atrophy, fibrillary twitchings, increased reflexes, and bulbar invasion; the other showed a pure dystrophy without twitching and without marked change of reflexes. Strümpell, ¹⁰⁰⁵_{V. 3, No. 6} in a case of progressive muscular atrophy of hereditary nature, in many respects apparently to be classified as a primary progressive myopathy, but in which, nevertheless, the primary disturbances were in the smaller muscles of the hand, found, at the autopsy, besides the muscular lesions closely analogous to those in myopathy, great alterations in the peripheral nerves and in the spinal cord, as, for example, the disappearance of most of the cellules of the anterior horns. In his opinion, the process originated in the muscles and, following an ascending course, reached the nerves and the spinal cord. Hirtz, of Paris, ³_{Sept. 19, '94} also reports, from a clinical stand-point, a case of mixed muscular atrophy presenting some characteristics of myopathic atrophy and others of myelopathic atrophy. These very interesting cases serve to illustrate the transition stages between the two forms. Hoffmann ¹⁰⁰⁵_{V. 3, No. 6} cites five cases of hereditary spinal muscular atrophy in one family and two in another. The trouble began in the back, the waist, and the thighs, the arms being only secondarily attacked.

Hammond, of New York, ¹_{Jan. 6, '94} exhibited microscopical specimens of two cases of progressive muscular atrophy, and referred to the fact that considerable confusion is occasioned by the misapplication of the term "peroneal type" to a disease totally dissimilar to the one under consideration. He concluded that his cases demonstrated that progressive muscular atrophy is due to a degeneration of the cells of the anterior gray masses and the nerve-tubes

in the antero-lateral white columns; also, that it is superfluous to divide progressive muscular atrophy into different types because the disease happens to begin in different groups of muscles. F. Peterson⁸¹⁴_{Mar. 15, '94} compares muscular atrophy of the myelopathic Aran-Duchenne type with the myopathies of the pseudohypertrophic form, with Erb's juvenile form, and the Landouzy-Dejerine form, and, as a basis for the comparison, reports a case of the Aran-Duchenne type and two of the juvenile form of Erb.

J. Taylor, of London,⁴⁵¹_{Jan., '94} publishes a characteristic case of muscular atrophy of the Landouzy-Dejerine type. The atrophy first showed itself in the arms at the age of 16, but the patient had already had trouble with his back during a period of two years. At the age of 17 the gait began to be modified; he could not entirely close his eyes; the frontal muscles and the orbicularis oris became affected. The reflexes were augmented. All the muscles reacted normally to electricity except those too much atrophied to react at all. There was no degeneration reaction. Peterson considers all the forms of myopathy—pseudohypertrophic, Erb's type, Landouzy-Dejerine type—as different presentations of one and the same affection. Von Limbeck⁵⁷_{Apr. 22, '94} reports a classical case of muscular atrophy, occurring in a man 52 years of age, in which the microscopical examination showed hypertrophy of the deltoid and fatty degeneration of the biceps. Fränkel⁶⁰_{Aug. 23, '94} also cites a case of juvenile hereditary muscular atrophy, the mother and maternal grandfather being affected with the disease. W. C. Krauss⁹⁸_{Jan., '94} devotes a critical review to the consideration of muscular atrophy as a symptom. In this connection he describes two appliances destined the one to measure the dynamometric force of the muscles of the leg, and the other the degree of atrophy. The first consists of a belt held at the waist by suspenders passing over the shoulders. To this belt is attached a sort of stirrup upon which the foot is placed and upon the shaft of which—a shaft shorter than the leg itself—is placed a dynamometer. On stretching the leg the dynamometric force is easily determined. The second appliance consists simply of two little bands subdivided into centimetres and arranged in the form of a T, which allows of the measurement of both limbs on either side at even distances.

Reinhold¹³_{May 15, '94} has observed a singular case of myopathic muscular atrophy in which the face and certain muscles drawing their

nerve-supply from the bulb were also involved. At the autopsy no alterations were found in the nerve-centres nor in the peripheral nerves; the muscles examined showed a simple atrophy of a certain number of the fibres, a great disproportion in the diameter of different fibres, an augmentation of the nuclei, and slight lipomatosis. Hermann Gessler¹³³_{June 25, '94} reports a very interesting case in which it is difficult to determine whether the affection is saturnine paralysis or progressive muscular atrophy. Cagney²²_{Feb. 28, '94} reports a case of progressive muscular atrophy beginning in the upper extremities, afterward showing manifest symptoms of bulbar paralysis, and finally weakness without atrophy of the lower extremities. As the reflexes were normal, there could be no question of amyotrophic lateral sclerosis. Two facts were noteworthy in this case: arrested progress of the disease after two years, enabling the patient to resume his occupation, and the return of the affection under the influence of cold, with its subsequent rapid progress. Erdgren⁶⁸_{July, '94} mentions a case of progressive muscular atrophy of neurotic origin, having begun in childhood.

Dejerine and Sottas⁹²⁷_{v. 2, pp. 63-96, '93}⁴⁷_{Winter, '93} present an interesting communication on interstitial, hypertrophic, and progressive neuritis in childhood. The two cases reported by these authors, while resembling the neuritic progressive muscular atrophy described by Hoffmann in several particulars, also differed from it in others, especially from an anatomico-pathological stand-point, and thus constituted independent affections. The patients were brother and sister, with nothing of special importance in the family antecedents. The following is a *résumé* of the cases: 1. Muscular atrophy and sensory affection in a woman of 44. Onset in early life with deformity of the feet, for which tenotomy was performed at the age of 6. Marked double club-foot (varus). Atrophy of leg- and thigh- muscles, most marked at the periphery. Atrophy of upper limbs (Aran-Duchenne type), diminishing from below upward. Excessive spinal curvature (kyphoscoliosis). Well-defined sensory troubles; delay in transmission of sensation, diminishing from periphery to centre. Lightning pains. Incoordination, distinct in upper limbs, less distinct in lower limbs on account of the atrophy. Walking difficult and uncertain, but still possible. Romberg's symptom present. Slight choreiform movements of head and trunk. Patellar reflex, olecranon reflex, and

plantar reflex absent. Pupils small, with very sluggish reflex to light. Nystagmus (dynamic). Fibrillary contractions of muscles of limbs and face. Sphincters and nutrition of skin not affected. Marked alteration of electrical contractibility without reaction of degeneration. Autopsy: Hypertrophy of nerve-trunks and spinal nerve-roots, with alteration of the posterior columns of the cord. Histological examination: Atrophy of the primitive fasciculus of the muscles, with slight steatosis and well-marked sclerosis of vessels without any interstitial myositis. Hypertrophic interstitial neuritis of the nerve-trunks, diminishing slightly from below upward, highly advanced in the muscular and cutaneous nerves. In the nerve-roots the interstitial lesion, being less fully organized, exhibited the character of a primitive monotubular interstitial neuritis. Similar lesions in the spinal ganglia. In the lumbar region sclerosis of Goll's and Burdach's columns; cervical region, Goll's columns highly sclerosed in their posterior part, columns of Burdach comparatively sound. No bacilli found in the nerves.

2. Man aged 34. Muscular atrophy associated with sensory affections and lightning pains; onset at 14 years of age. Commencement of atrophy in the leg-muscles; later on, extension to the muscles of the hands. Muscles of the proximal parts of the limbs intact. Club-feet (equinus). Atrophy of hand-muscles, of the Aran-Duchenne type; fibrillary contractions in the muscles of limbs and of face. Considerable alteration of faradic and galvanic contractibility, but no reaction of degeneration. Curvature of spine (kyphoscoliosis). Ataxia of upper and lower limbs; inability to walk in the dark; giving way of the legs. Romberg's sign. Nystagmus (dynamic). Pupils are small and of Argyll-Robertson type. Commencing atrophy of left optic disc. Deafness. Abolition of tendon reflexes at knee and elbow and of skin reflex from sole. Considerable modification of the various modes of sensibility, diminishing from below upward. Marked hypertrophy and induration of all nerves of the limbs accessible to palpation. Severe lightning pains, sometimes causing the patient to fall down. Micturition, defecation, and the genital functions normal. No trophic lesion of the skin. Syphilis at 24 years of age. Excess in alcohol. Mental degeneration.

Hoffmann, of Heidelberg, ^{1005 47}_{'93 ; Winter, '93} in a work on chronic spinal muscular atrophy in children, and affecting several members of

one family, makes several statements concerning the classification of muscular atrophies, which he divides into spinal, neuritic, and muscular forms. This classification is established partly on an anatomical and partly on a clinical basis. Among the clinical characteristics heredity has hitherto been considered to appertain only to the muscular type; but he shows that a progressive muscular atrophy of spinal origin may also exhibit this character, attacking, as do the other two types, several members of the same family. He cites the cases of two families, in each of which two children were affected by the same form of spinal atrophy. In both families one child died, and the post-mortem examinations showed atrophy of the cellules of the anterior horns; degeneration of the nerves, diminishing toward the periphery; and muscular atrophy.

Bernhardt ²⁰_{B.115, H.2, '93; Winter, '93} ⁴⁷ gives an account of three cases of hereditary spinal muscular atrophy, complicated with bulbar paralysis. The first case, that of a man 40 years of age, presented almost exclusively the appearance of bulbar paralysis. In the second (a cousin of the first) there was atrophy of the muscles of the neck, the shoulders and the arms, but no evidences of bulbar trouble. Finally, in the third (cousin of the preceding case) there were symptoms both of bulbar paralysis and of muscular atrophy of the shoulders and arms.

Paul Richer, of Paris, ²⁰⁸_{July 28, '94} has studied the walk of myopathics. It is well known that they have a peculiar swinging gait to which the expressive name of "duck-waddle" has been applied. This gait arises from two principal causes: (1) a lateral inclination of the pelvis, exaggerated at each step toward the side of the oscillating leg; (2) a lateral inclination of the entire trunk, which at the same time finds itself thrown over toward the side of the supporting limb. The cause of these two symptoms lies almost entirely in the weakening of the muscular masses of the pelvis, especially the glutæus medius. The pelvis being no longer held on the supporting side by a sufficient force, naturally falls, at each step, toward the oscillating side, being drawn in that direction by the member attached to it. The same author has, in connection with Meige, ²¹²_{Aug. 10, '94} demonstrated that myopathics are incapable of standing on their heels with the toes turned upward and the point of the foot raised from the ground.

This is due to the fact that the fibres of atrophied muscles of the calf of the leg are replaced by fibrous tissue which contracts. Thus, if the upright position is still possible for myopathies, standing on the heels is not as soon as the atrophied muscles have become fibrous. This symptom alone, therefore, suffices to reveal the fibrous transformation in the muscles of the calf in progressive myopathy. Brissaud and Souques, of Paris, ¹⁰⁰Apr. 14, '94 presented a young man, aged 27 years, without special hereditary antecedents, affected since the age of 17 years with a primary progressive myopathy, remarkable for the very pronounced character of the vicious attitudes. The atrophy left unaffected only the deeply-seated muscles of the neck, the forearms, the hands, the legs, the feet, and the spinal deltoid group. In the atrophied muscles neither fibrillary twitchings nor degeneration reaction are noticeable. Sensibility is normal. The patellar and olecranon reflexes are abolished, owing to the marked degree of the amyotrophy. Loude and Meige, of Paris, ⁴⁵²May, June, '94 report an interesting case of generalized primitive myopathy, which, besides this affection, also shows excessive nervous heredity, as well as other amyotrophic conditions. Huet ⁴⁵²May, June, '94 carefully studied the electrical excitability of the nerves and muscles in this case, and was only able to show a diminution proportional to the degree of the atrophy. Lépine, of Lyons, ⁵⁹Apr. 14, '94 has demonstrated that the contractures cited by Landouzy in myopathic atrophy, may exist in the various forms of atrophic or pseudohypertrophic amyopathies of the lower extremities.

Meige, of Paris, ¹⁴Aug. 26, '94 shows that the changes in the face during progressive myopathy are not peculiar to the Landouzy-Dejerine type, but are merely a superior degree of those met with in other myopathic conditions. Electrical exploration admits of the recognition of these alterations, which might otherwise escape notice, and which, when determined, are aids to the diagnosis. Rendu, of Paris, ²¹²Feb. 10, '94 quotes a case of hysterical hemiplegia following great emotion and accompanied by muscular atrophy in such a manner as to simulate radicular paralysis. Hirt ²June 23, '94 cites a case of hysterical muscular atrophy, and Chantemesse, of Paris, also reports one case. This affection is now, moreover, well known. J. Collins ²⁴²Feb., '94 reports an interesting case of progressive muscular atrophy combined with locomotor ataxia.

Féré, of Paris, ⁹¹_{Oct. 10, '93} describes the case of a man, 45 years old, who presented himself at the hospital for treatment for epilepsy. The personal history showed that at the age of 4 months he had received a severe superficial burn, limited to the hand and fingers, but not including the thumb. He presented an atrophy, including the thumb with the rest of the hand. The author, from this, deduces the conclusion that atrophy of the whole extremity may be expected after severe traumatism received in infancy. Idzinski ⁴¹_{July 26, '94} reports the case of a patient, aged 24 years, soldier, who received an injury of the skull in the right parietal region. The bone had not been exposed. Two weeks after he noticed a decided weakening of the left shoulder, which increased rapidly and necessitated his admission to the hospital. Examination showed a marked atrophy of all the muscles of the left shoulder. The author diagnosed the case as one of cerebral atrophy, the diagnosis being verified by exclusion of all other diseases.

Vanni ⁵⁷_{Feb. 4, '94} reports a curious case in which ataxic troubles came on in a young man having pleuro-pneumonia, after the loss of the muscular sense. A peculiar feature is the fact that his three sisters, father, and grandfather, all had similar troubles following infectious diseases. Robertson ²¹³_{June, '94} observed a singular case of muscular atrophy occurring eight or nine years after an attack of articular rheumatism. The atrophy began in the shoulders, but had not yet invaded the hands, and but very slightly the fore-arms. Improvement was shown on one side after treatment by electricity.

Prautois and Etienne, of Nancy, ⁹²_{Apr. 10, '94} describe the trophic, osseous, and articular symptoms in a man with myelopathic muscular atrophy,—a co-existence not yet cited. The lesions consisted of indentations in the humerus at its head, osteophytes at the level of the scapulum, friction indentation and luxation of the external extremity of the clavicle, similar to those occurring in tabes. Dercum ²⁴²_{Mar., '94} quotes a case of true muscular atrophy with arthropathies, and J. Hutchinson ¹⁰⁷⁷_{June 27, '94} reports an interesting case of acro-arthropathy in connection with a pleuro-pulmonary affection, afterward complicated by retraction of the palmar aponeurosis. In comparison he showed a case of pseudohypertrophy of the hands, associated with weak circulation, which had existed since early childhood in a woman 24 years of age. S. Boyd ⁴⁵¹_{Nov., '93} has observed

atrophy of one cheek in a young girl of 14 years, following a blow on the ear which had caused severe pain.

Brial, of Bordeaux, ¹⁸⁸_{Feb. 25, '94} cites a very curious case of general atrophy of all the organs. Not much information was attainable concerning the patient, aged 43 years. The muscles scarcely projected beyond the surface. Under the skin and in the organs there was a total absence of fat. The heart, liver, kidneys, and spleen were very much smaller than the average. The autopsy showed that death resulted from atrophy of all the organs.

Ranieri ⁵⁸⁹_{Nov. 29, '93} discusses a peculiar case of muscular pseudo-hypertrophy in an adult. The right arm only is hypertrophied. The skin presents no unusual appearance in repose, but becomes very red whenever the slightest effort is made. The brachial biceps and the flexors of the hand are much increased in volume. The temperature of the right arm is higher than that of the left. The face is normal on both sides. Sensibility in its various forms is not modified in any way. No difference in electrical reactions on either side. The reflexes are diminished or abolished on the right. Vitiligo exists on the hands, especially the right one. The author is inclined to admit, by exclusion, the existence of a central nervous lesion, probably in the sympathetic ganglia.

Myositis.—Emily Lewi ⁵¹_{July, '94} cites a case of traumatic myositis of the sterno-cleido-mastoid in an infant of 5 weeks. Forceps were used at the birth after prolonged traction by a midwife. In two weeks and a half a swelling appeared on the left side of the throat; the head inclined to the left. The left sterno-cleido-mastoid was felt as like a cord, and back of its posterior edge there was a small tumor upon which the skin was movable. The right sterno-mastoid was in a state of passive extension. All the symptoms seemed to disappear after a certain time. The author mentions, as a peculiarity of this case, the fact that the head was turned toward the injured side.

J. Larger ²⁰³¹_{'94} describes, under the name of acute primitive and infectious polymyositis, the affection designated by Unverricht as acute dermatomyositis. The pathogenic microbe is not necessarily a streptococcus, as the pneumococcus has been met with. The differential diagnosis must be established from trichinosis, glanders, rheumatism, osteomyelitis, etc. Tédénat, of Montpellier, ³¹_{Dec. 20, '93} has made a study of a rare and interesting case in which

there was a very large abscess of the right brachial biceps, remarkable for the slowness of its evolution and the almost entire absence of fever and pain. Microscopical examination of the portions of the wall resected showed an absence of the bacillus of Koch and of tuberculous lesions, but revealed slight lesions of interstitial myositis.

Derville and Vallin, of Lille, ²²⁰_{Apr. 14, '93} report a case of syphilitic myositis of the arm in which a trauma suddenly aggravated the initial lesion due to syphilis,—a circumstance which might in certain cases present some medico-legal importance. Spillmann ³¹_{Sept. 6, '94} presents the case of a woman, 31 years old, with tertiary syphilis and numerous gummata, who showed, among the most interesting lesions, a sclero-gummatous myositis of both sterno-mastoid muscles, which were hard and of an almost cartilaginous consistency and greatly increased in volume. Under specific treatment these symptoms improved rapidly.

Senator ⁶⁹_{Sept. 28, '93} reports two cases of the rare affection, acute infectious polymyositis, which, all appearances to the contrary nevertheless, differs from neuromyositis. In the former the nerves remain healthy, paralysis proper is absent (the inability to move is a purely mechanical result of the swelling and pain), inflammatory œdema and muscle-swelling are invariable and characteristic accompaniments; while the anæsthesia, skin affections, and progressive muscular atrophy of neuritis are wanting. One may be a primary myopathic, the other a primary neuropathic, affection. The etiology of both is still wrapped in mystery, but the author theorizes in favor of an intoxication through the alimentary canal, possibly of organic nature.

Weldon Carter, of London, ⁶_{Feb. 10, '94} cites a case of myositis ossificans in a boy 9 years old. The sacro-lumbar muscles, the adductors of the thighs, and the trapezius presented mobile osseous masses; the bones were, for the most part, hypertrophied and irregularly deformed. The case was especially interesting as showing an association with hallux valgus and microdactylia. Virchow ⁴_{Aug. 6, '94} presented a man, 29 years old, attacked by generalized myositis ossificans, which began, at the age of 19, with a serious affection involving the whole of the right side, becoming localized in the right shoulder and arm. Tumefactions occurred in the region of the muscles attacked. In the spring of every

year there was a renewal of the trouble, and the malady extended to the left side. The author considers it an affection of the bones secondarily involving the muscles.

Adler⁶⁹_{Mar. 8, '94} presented the preparations of a case of neuromyositis of undetermined origin. From the results of the clinical and microscopical examinations the author concludes in favor of a transition condition between beriberi and acute polymyositis. Senator⁶⁹_{Sept. 28, '94} in an article on acute polymyositis and neuromyositis, presents two cases, one occurring in a diabetic in whom evolution took place in fourteen days, terminating in death, and the other in a healthy man, following the eating of shrimps, and cured in two months. In the first he found intense interstitial myositis, with proliferation of the nuclei between the fibres, particularly in the perifascicular and perivascular connective tissue. The intra-fibrillary tissue was cedematous.

PARALYSES.

Paralysis Agitans.—Peterson, of New York,¹_{June 30, '94} presented to the Neurological Society of that city a patient offering all the characteristics of paralysis agitans, with exception of the tremor.

Theodore Diller⁹⁹_{Dec. 7, '93} recalls the experiences of Ketscher,⁴⁰⁵_{B. 12, p. 445} who, having met with the same symptoms in persons attacked by paralysis agitans and in very old persons entirely free from this affection, concludes that paralysis agitans is simply a precocious evolution of senility. Diller noticed, in three patients suffering from this form of paralysis, undeniable symptoms of premature senility, and, strangely enough, the three invalids all stated that they had suddenly felt very old. However, further and more numerous observations of the same nature would be necessary to establish these facts. A patient of J. Hutchinson⁸⁰⁶_{Jan., '94} presented a peculiar form of paralysis agitans affecting only the members of the right side. Upon attempting to use the right hand, both it and the foot began to tremble. The same was the case on trying to write.

Maragliano⁵⁹⁶_{Feb., '94} had under observation a man, 35 years old, who, after a fall, was subject to slight tremor in the left arm, which gradually increased and affected the left leg and, later on, the right leg as well. Pain was felt in the vertebral column throughout the lumbar region, and there was mechanical difficulty

in micturition and defecation. The most remarkable symptom was the alternation of tremor and contraction. The author is of the opinion that paralysis agitans was about beginning at the time of the accident, and that chronic meningeal myelitic symptoms were developed in consequence of the traumatism. The diagnosis would, therefore, be Parkinson's disease and a medullary lesion of traumatic origin.

Frank P. Norbury, of Jacksonville, ²⁴²_{June, '94} reports the case of a woman, aged 53, suffering from mental alienation for six years, at which time the first symptoms of paralysis agitans manifested themselves. The affection developed very rapidly, and at the end of six months the patient was unable to leave her bed. The contractions, which at first affected the hands, the legs, and the trunk, afterward invaded the muscles of the hips, thighs, and forearms. The right thigh was bent upward at a right angle and perpendicularly with the body over the left leg, which was flexed upon the thigh and the thigh upon the pelvis. The fingers of the left hand were flexed and rigid and lapped over each other.

Redlich ³⁹⁵_{Jan., '94} gives the results of seven autopsies in cases of paralysis agitans. He does not, like Ketscher and other authors, attribute the lesions to senility, and insists upon the analogy existing between Parkinson's disease and the "progressive tabetic contractions of atheromatous subjects" of Demange, as well as the "senile paralysis" of Gowers. In his opinion, the muscular contractions are due to lateral sclerosis; the paræsthesia, pains in the legs, and sensations of heat and cold to the lesion of the posterior cords; the tremor to functional weakness.

In his lectures at the Salpêtrière, Brissaud, of Paris, ²¹²_{Apr. 25, '94} tries to elucidate the nature and the pathogenesis of Parkinson's disease. Having set aside the theories considering it as either a neurosis, a form of precocious senility, or a malady due to a muscular lesion, he develops the tonus theory. Muscular tonus is neither a contraction nor a relaxation, but permanent intermediate condition; it may be supposed that, being subjected to a morbid exaggeration, it causes union,—the essential element of Parkinson's malady. Would it not seem that the centre of muscular tonus is to be looked for in the region situated at the confines of the fibres of voluntary and of involuntary movements? In a word, would not a lesion of the *locus niger* be the anatomical

substratum of Parkinson's disease? Brissaud admits that this is merely an hypothesis, and that the facts are not yet sufficiently numerous for its full justification. Lannois, of Lyons, ²¹¹_{Apr. 8, '94} has observed a case of paralysis agitans in a young man aged 18 years. The tremor began at 12 years of age, and from that time the physical and intellectual development appeared to be arrested.

Boeri ⁵⁹⁶_{May, '94} recommends duboisine, daturine, and atropine for combating the tremor of paralysis agitans. Their action may be rendered permanent by subdividing the doses in the form of pills or granules. Edward C. Mann, of Brooklyn, ¹⁸⁵_{Oct., '93} had under treatment a woman, 50 years of age, attacked by paralysis agitans. The malady came on gradually, after trouble and sorrow, and was complicated by subacute mania, hallucinations of sight and sound, and ideas of persecution. There was muscular rigidity, anterior torticollis, an inclination of the body, and generalized tremor. After prolonged electrical treatment all the morbid phenomena successively disappeared and the patient recovered. The author does not consider that there was any organic lesion, for in that case recovery would not have taken place. He rather inclines to think that there was congestion of the upper portion of the spinal cord and of the bulb and annular protuberance, which congestion disappeared under the influence of galvanism. De Renzi, ⁵⁹⁶_{May, '94} in reviewing the medicaments generally employed in paralysis agitans, concludes that those which most easily produce vertigo, such as hyoscyamus, duboisine, etc., have the most efficacious action on the tremor. This would tend to confirm the cerebral origin of the tremor,—a theory long since advanced by the author.

Facial Paralysis.—Suckling, of Birmingham, ³²_{May, '94} observed a case of double peripheral facial paralysis in a woman, 51 years of age, whose face, owing to her occupation, was continually exposed to steam. One day she noticed a diminution of the sense of taste and difficulty in mastication. The next day she was unable to close her eyes. There was no trouble with the soft palate and no optic neuritis. Degeneration reaction very pronounced on both sides. Hitzig, of Halle, ²_{Mar., '94} affirms that, in peripheral paralysis of the facial nerve, the tongue is never deviated on the affected side. Brissaud and Marie, of Paris, ¹⁴_{Dec. 3, '93} report a case of total facial diplegia, with glosso-laryngo-cervical paralysis. In this patient the

grouping of the paralytic symptoms was irregular; they affected the levator palpebrarum, the muscles supplied by the inferior and superior facial nerves, the larynx, the tongue, and certain muscles of the neck. Edgeworth, of Bristol, ²_{Jan. 6, '94} treated a little girl, 7 years old, who, since her birth, had suffered from bilateral facial paralysis. The mother had been delivered with forceps, and the child presented, in the vicinity of both ears, lesions which disappeared at the end of a month. Edgeworth calls attention to the rare occurrence of bilateral facial paralysis from the use of forceps. In the cases usually observed there is a facial paralysis of only one side. E. Boix, of Paris, ³⁶⁰_{Feb., '94} in an article on precocious peripheral facial paralysis during the secondary period of syphilis, considers this affection as the manifestation of a precocious tertiarism. The immediate administration of iodide of potassium, combined with a mercurial treatment, is indicated, even though the patient be in the very first stages of the secondary period. Jossierand and Nicolas, of Lyons, ²¹¹_{Feb. 11, '94} have had under observation a case of peripheral facial paralysis *a frigore*, complicated by a bilateral tumefaction of the face. They attribute this swelling to the paralysis of the vaso-constrictor nerves of the seventh pair.

P. Darquier ²¹²_{July 25, '94} publishes an interesting study relative to recurrent paralysis of the third pair, in which he refers to all the cases cited up to the present date, numbering twenty-seven. The affection usually begins with violent pains, localized in one side of the cranium, nausea and vomiting, and contractions. The paralysis then becomes established; ptosis, external strabismus, mydriasis, paralysis of accommodation, and crossed diplopia develop, with very intense, persistent, unilateral pain, with frequent irradiation toward the base of the head and upper portion of the neck, being greatest in the supra-orbital region. The treatment consists in the administration of morphia, bromide and iodide of potassium. E. C. Rich, of Ogden City, Utah, ⁹_{Apr. 15, '94} describes a form of motor paralysis *a frigore*, with identical symptoms in different members of the same family. Under the influence of cold or dampness the muscles most exposed become rigid and remain either in a state of extension or flexion; the muscles of the face are most frequently affected. The trouble seems to consist solely of a motor disturbance, and the sensory nerves remain unaffected. When the tongue is involved the sense of taste is unimpaired. Recovery

is always complete and follows hot applications to the affected parts.

F. W. Mott, of London, ²_{Dec. 2, '93} had under his care a young man, 17 years old, affected with bilateral facial paralysis, which had made its appearance several days before his admission to hospital, and which Mott attributes to a cold which had caused the swelling and compression of the facial nerves at their passage into the stylo-mastoidian trunk. As recovery took place quickly, he thinks that the compression, though sufficiently great to interfere with the nervous conductivity, was not severe enough to cause degeneration.

Goldzieher ⁸¹⁴_{May 15, '94} has remarked that in cases of complete paralysis of the facial nerve there is no tear-secretion on the paralyzed side, though the conjunctiva is moistened. This lubrication is maintained by a special secretion under the influence of the vasomotor nerves of the vessels of the conjunctiva. Douillet has met ³¹_{July 30, '94} with facial paralysis during the course of secondary syphilis, appearing eight days before the beginning of roseola, and he considers it as a consequence of the syphilitic affection. Placzek ¹²⁶_{July 15, '94} cites 4 cases of inveterate peripheral paralysis (1 of the right facial, 2 of the left facial, and 1 of the left brachial plexus) with conservation of electrical excitability of the muscles and nerves. Maria M. Vinton, of New York, ⁹_{Mar. 24, '94} describes the pathology and symptoms of peripheral facial paralysis, of which she has seen a considerable number of cases, and concludes that electrical treatment should be early resorted to and continued in a regular and persistent manner during a period of from two to eight months. Moninzko ⁶_{June 9, '94} has observed two cases of double facial paralysis. In one of the patients, a syphilitic, the affection began three months after the appearance of the chancre. The second patient had had small-pox. The facial paralysis began on the right side after severe pains, and three weeks later also affected the left side. Both cases had a favorable issue.

Hysterical Paralysis.—A woman, aged 33 years, treated by René Verhoogen, ⁸⁶⁸_{Dec., '93} presented paralysis of the left great serratus, which began very suddenly. One evening she retired in good health and awoke paralyzed. A study of the antecedents and direct examination of the morbid phenomena resulted in a diagnosis of hysterical paralysis. Static baths, with sparks on the arm

and shoulder for periods of ten minutes, brought about rapid amelioration. Pitres, of Bordeaux, ²⁵ July, '94 cured two cases of hysterical paralysis by the administration of methylene-blue. The first patient, aged 52 years, had become hemiplegic and deaf after a great fright. The second patient, a woman, presented brachial monoplegia, consecutive to a fall upon her shoulder. Both patients, terrorized by the administration of these pills of methylene-blue, which had been represented to them as consisting of a very dangerous remedy, experienced various disturbances and recovered at the end of several days. Lépine, of Lyons, ²¹¹ Apr. 5, '94 advances, as an hypothesis explaining the motor and sensory paralysis of hysterical subjects, that, from some psychical cause, a lack of perfect continuity between the ramifications of the cellules of the cerebral cortex occurs, causing an interruption in the passage of the nervous influx. This passage may be re-established by another psychical action like that of the will, causing erethism of the cellule and of its prolongations. Pinet replies that the investigations should not be directed to the contact or non-contact of the nervous cellular prolongations, but rather toward the physiochemical constitution of the cellule, which constitution may be influenced or modified by various causes.

Miscellaneous.—Martin ¹ June 9, '94 cites a case of Bell's paralysis following typhoid fever. Massage and electricity produced a decided amelioration.

Byrn, of Hull, ⁶ Aug. 25, '94 gives the history of a female patient suffering from periodical attacks of acute bronchitis of a peculiar character. At the beginning of an attack there was redness of the face, difficulty of respiration, fever, violent frontal pain,—localized above the left orbit and radiating to the side of the head, with disturbances of vision and injections of the conjunctiva, the right arm becoming paralyzed and partially anæsthetic. These symptoms usually lasted for about three hours. Byrn attributes the brachial monoplegia to congestion of the motor centre of the arm, occasioned by the effort of the cough.

A young woman, 19 years old, observed by Lewis Jones, ² Apr. 21, '94 was affected with paralysis of the trapezius and the sterno-mastoid, accompanied by deafness and facial paralysis. The soft palate was not involved. The cause of the trouble remained unknown. Madame Sacara-Tulbure, ⁹² Apr., June, '94 having met with numerous cases

of pseudohypertrophic paralysis in the hospitals of Bucharest, is convinced that the mechanism of the attitudes of this affection, that of lordosis in particular, is quite different from what is usually supposed. She insists upon the dissemination and the extent of the muscular lesion, which is not so much to be sought for in the change of volume as in the insufficiency and motor weakness of the muscles, characteristic of the affection. In three cases she observed atrophy of the hand. The lordosis is caused not by paralysis of the lumbar muscles, but by their action, the intensity of which is yet sufficient to stretch the vertebral column and to draw the trunk backward. Suckling¹⁵_{Mar., '94} considers diphtheria as the principal cause of paralysis of the diaphragm. The most important diagnostic symptom of this paralysis is the aphonia, probably caused by the insufficient penetration of air into the lungs. Another diagnostic element is furnished by palpation; the hand being placed upon the hypochondrium can estimate the descending force of the diaphragm (the patient's attention should not be directed to his breathing). As a third symptom there is weakening of the vesicular murmur, particularly at the base of the lung. The sensation of distress experienced by the patient is also a very important symptom; he feels as though he could no longer breathe, and that he is about to die. Aphonia following angina should always suggest paralysis of the diaphragm.

Bernhardt,⁴_{Mar., '94} having repeated the experiments made by Gumpertz concerning the alterations of electrical excitability in chronic lead poisoning, concludes that the symptoms indicated are found in healthy persons, and are, on the contrary, absent in many suffering from lead poisoning, and that they consequently have no diagnostic value.

M. A. Claus⁸⁶⁸_{May 26, '94} reports a case of bilateral neuritis of the brachial plexus, suddenly following influenza. Complete paralysis of the arms occurred, with atrophy and reaction of degeneration in the paralyzed muscles. The father of the patient had been similarly affected in the lower members also after influenza.

Pribitkow³¹_{Dec. 9, '93} gives the results of an autopsy in a case of Landry's ascending paralysis, and considers himself justified in admitting the existence of a pathological process of the central nervous system in this affection.

Reymond and Weil, of Paris, ⁷_{No. 18, '94} relate the history of a man who entered the hospital with a localized paralysis of the left leg, and presenting neither sensory troubles, coma, apoplexy, nor albumin in the urine. A highly-localized lesion of the cortical substance of the right hemisphere was diagnosed. The patient died, and the autopsy confirmed the diagnosis. The right hemisphere showed two small centres of softening,—one at the base of the first frontal, at its point of union with the ascending frontal, and the other at the level of the paracentral lobule. Reynolds ²_{Dec. 9, '93} presented at the Manchester Medical Society a case of right-sided hemiplegia with paralysis of muscles of the left eye. Raymond, of Paris, ⁷³_{Feb. 10, '94} in a very interesting lecture on infantile spasmodic paralytic affections, shows that neither in children nor in adults is there a peculiar morbid form always recognizable by the same totality of symptoms corresponding to the lesions of the same nature and in the same locality. The pathological conditions designated as Little's disease, spasmodic infantile paraplegia, spasmodic infantile hemiplegia, and infantile cerebral diplegia are not distinct morbid types, but variations which present, in a special manner, the associations of certain symptoms among which contraction and motor paralysis predominate. He recognizes ¹⁵_{Apr., '94} two forms of spasmodic infantile paralysis, etiologically considered. The first occurs in prematurely-born children, the lesion being caused either by the interruption of the placental circulation or by a traumatism at the time of delivery. In the other form the disease begins several months after birth, and has the same origin as the spasmodic paralysis of adults. David Ferrer ²_{Sept. 30, '93} separates atrophic paralysis into two groups, according to the presence or absence of degeneration of the muscular fibres. He distinguishes: 1. The myopathic muscular atrophies (pseudo-atrophic paralysis, the hereditary muscular atrophy of Leyden and Möbius, the juvenile muscular atrophy of Erb, the Dejerine-Landouzy type, the Charcot-Marie type). 2. Neuropathic muscular atrophy, dependent upon a lesion of the peripheral nerves. 3. Myelopathic muscular atrophy of central origin (ophthalmoplegia, bulbar paralysis, atrophic spinal paralysis). Féré ¹⁴_{Feb. 14, '94} recognizes that, in atrophy of the muscles in infantile hemiplegia, the atrophy usually attacks the little and ring fingers, and less frequently the thumb and index finger; the middle finger is sometimes unaffected,

like the radial fingers, and sometimes atrophic, like the ulnar. Moyer ⁹_{Feb. 24, '94} observed a case of paralysis of the left leg following a traumatism, the patient having fallen from a height of ten to fourteen feet. Absence of tactile and thermic sensibility and insensibility to pain and pressure were noted. The limb was cold and of a bluish color, with exaggeration of patellar reflexes on both sides. Speech was unaffected, and there were no ocular disturbances, while the upper members were normal.

Paul Richer, of Paris, ⁹⁹⁶_{Feb. 15, '94} has studied the causes and general character and the complications, diagnosis, and general treatment of hysterical contractions, and reviews the particular symptoms of the various forms of hemiplegia, monoplegia, and paraplegia; the contractions and paralyses of the face, muscles of the larynx, etc. In a communication to the New York Academy of Medicine on scorbutic pseudoparalysis, Henry L. Taylor ¹_{Apr. 14, '94} reports the case of a child, 11½ months old, supposed to be paralyzed, and in which scurvy was noticeable. After appropriate treatment all abnormal symptoms disappeared.

Frank Müller ⁸⁶⁶_{June, '94} has observed seventy-two cases of arsenical paralysis. In the cases of acute or subacute poisoning the choleric-form period, when not fatal, is followed by recovery after two weeks, or by the appearance of the paralysis after a short period of improvement. The onset is heralded by paræsthesia, hyperæsthesia, sensations of severe pain, and painful anæsthesia of the extremities. It is important to establish a differential diagnosis from saturnine, alcoholic, diphtheritic, and rheumatic paralyses. Braun, of Königsberg, ⁶⁹_{Jan. 18, '94}; ⁸⁶⁶_{June} calls attention to the total or partial paralysis of the brachial plexus occurring after extreme and prolonged extension of the arms above the head, and attributes many of the cases of paralysis occurring during sleep to this cause. The lower members, of which the nerves are protected by thick, muscular masses, are not liable to these accidents.

Leopold Galavielle ⁸⁶⁶_{June, '94} treats of pseudobulbar paralysis of cerebral origin. Having had occasion to perform an autopsy upon a subject thus affected, he observed the following lesions: Arteriosclerosis of the cerebral arteries, and spots of softening in the external anterior portion of the lenticular nucleus and in several fasciculi between the internal capsule and the lateral ventricle on the right side; on the left these existed in the anterior segment

of the internal capsule, the caudal nucleus, the lenticular nucleus, and the posterior external portion of the thalamus.

Moyer⁹_{Feb. 24, '94} mentions two cases of scapulo-humeral paralysis of peripheral origin. The first patient was a young man, 21 years old, who had received several wounds, one of which, a cervical wound, necessitated the ligation of the external jugular. There was a thick, adherent cicatrix, three-fourths inch above the clavicle, on the clavicular portion of the sterno-mastoid, at the level of the brachial plexus. The efforts at raising the arm presented the appearance of ankylosis of the shoulder-joint. Rotation was considerably diminished. Flexion of the forearm was impossible, and there was limited supination and reaction of degeneration in the affected muscles. The second case was that of a newly-born infant, the brachial plexus having been compressed by forceps during the confinement. The following day it was noticed that the child could not move the right arm. Paralysis of the biceps, the supinator longus, and the deltoid was found.

Bernhardt^{4, 5}_{Jan. 8 ; Mar., '94} publishes a report of a case of peripheral paralysis limited to the subscapular nerve. The patient had been suffering pain in the right shoulder for four years, intensified upon pressure, and close examination disclosed the existing paralysis.

Thévenet, of Lyons,²¹¹_{Apr. 22, '94} has observed a case of pseudo-hypertrophic paralysis, without hereditary antecedents, of slow development, and with retraction of the lower limbs.

Leyden²⁶_{Apr. 2, '94} publishes two cases of multiple neuritis following influenza, one complicated by acute ascending paralysis. The latter affection presents two forms,—one bulbar, the other neuritic.

TREMOR.

Ughetti⁹⁹⁶_{Dec. 25, '93} has invented a new apparatus for measuring the trace of the tremor during exertion, and has determined by its use that the causes influencing the tremor act through the medium of the circulation, and not through that of motor innervation. These circulatory troubles may be independent of the nervous system. The author does not consider that senile tremor is peculiar to old age. Tonic tremor resembles the essentially hereditary tremor. Azoulay and Regnault¹⁴_{Aug. 19, '94} propose that a violent effort be made by the patient as a means of exaggerating the tremor, this being very useful in the clinic.

Diller, of Pittsburgh, ¹⁶¹_{May, '94} and Arnould ¹⁰⁰_{June 30, '94} publish general reviews on tremors, and Delmas, of Bordeaux, ¹⁸⁸_{Oct. 1, '93} on hysterical tremors, the last-named concluding that the majority of cases occur in women, and that the sensation of trembling, in the form of internal vibration, persists even in repose in certain cases. E. Hamaide, ²⁰³¹_{'93} in studying the relationship between essentially hereditary tremor and mental degeneration, admits the existence of true hereditary tremor, without any other nervous trouble, attacking all the members of a family, beginning in childhood and increasing with age. The oscillations are very rapid and only occur during voluntary motion. The affections may exist in all the members. According to the author, it is a degeneration stigma. Dana ⁴⁶²_{Apr., '94} reports a case of hereditary tremor in a woman 27 years old, both hands being affected.

F. Peterson ¹_{Mar. 10, '94} has studied, by the graphic method, the rapidity of the various forms of tremor, and has reached figures differing slightly from those of other authors. In paralysis agitans, in particular, he finds from 3.7 to 5.6 oscillations per second instead of the usual average of 4 to 5. Double athetosis is still a rather rare affection. Brissaud and Hallion ¹⁰⁹⁰_{p. 409, '93} publish a case, in a child 7 years old, which, after convulsions, had been confined to bed for three years, being unable to walk. Simultaneously with the motor troubles there were disturbances of speech and slight scoliosis. The authors attribute these athetotic symptoms to cerebral lesions. McGillicuddy ¹_{Oct. 7, '93} reports a case of post-hemiplegic athetosis in a young woman subject to epilepsy for a number of years.

THOMSEN'S DISEASE.

Allen Smith ⁴⁵¹_{Mar., '94} reports an interesting case of traumatic hysteria, in which, after various phases of sensitive motor paralysis, a spasm preceding all voluntary motions occurred, presenting the exact appearance of Thomsen's disease. Süsskand ³¹⁹_{Aug. 4, '94} reports a case of myotonia congenita which, he concludes, is a congenital functional abnormality of the voluntary muscular system consisting in an undue muscular irritability. Schott ⁴_{No. 50, '93} ⁸⁶⁶_{Mar., '94} relates two cases in a father and son. His evidence goes to show that massage, in combination with gymnastics and warm mineral baths, will produce a temporary improvement, but that a complete cure cannot be obtained by physical means. Le Roy de

Mericourt ¹⁴_{Sept. 19, '94} remarks that this affection should be classed among those exempting from military service.

CONVULSIONS.

Punton ⁴³⁰_{June, '94} establishes the fact that the significance of convulsions in children is in direct ratio to the amount of disturbance created by any cause operating on the nervous centres in such a way as to interfere with their harmonious correlation, more especially in the formative period of life. Diller, of Pittsburgh, ¹⁶¹_{July, '94} presents a semeiological study of convulsions in all the affections in which they are most often observed. Cornelia Chernbach, of Bucharest, ¹¹⁸_{Sept., '94} has experimentally studied, upon animals, the pathogenesis of convulsions. She concludes as follows: 1. It must be admitted as a probable fact that certain convulsivant substances are found in the organism, which produce auto-intoxication. 2. These auto-intoxications in all probability, and according to the results obtained, form the best explication of the production of convulsive symptoms in children during infectious diseases or their consequences. 3. Changes in the liver, diminishing its antitoxic action, favor auto-intoxication, and consequently the production of convulsions. Plicque ¹⁰⁷⁷_{May 30, '94} and Jules Simon ^{100 673}_{Feb. 22, '94; May} advise, besides the other procedures usually adopted in the treatment of convulsions in children, injections containing chloral hydrate and musk. Schumann ²_{July 21, '94} recommends massage of the intestines in infantile convulsions, because of their very frequent intestinal origin.

RAYNAUD'S DISEASE.

Zeller ⁶_{Dec. 30, '93} reports a singular case of gangrene of the fingers of one hand in an anæmic girl aged 20 years. The case resembled in many respects the condition known as the angiospastic gangrene of Raynaud, but the symmetry which characterized that disease was absent in this case. Dehio ¹³_{Apr., '94} has made an histological examination of a case in which amputation was necessary. The epidermis and the rete Malpighii were not changed, but the skin and the subcutaneous tissue showed slight inflammatory infiltration. The vessels were the seat of fibrous endarteritis or of endophlebitis. The nerves of the fingers were also greatly altered. The author considers that the origin of the morbid process in this case may be looked for in the spinal cord. Panas ⁸¹⁴_{Sept. 1, '94} also examined a case of

gangrene of nervous origin in a man, 35 years of age, who was obliged to have one leg amputated. Endovasculitis and alteration of a large number of the nerve-fibres of the anterior tibial were found. He considers the endovasculitis due either to gout or to a nerve-lesion.

Löbl ⁸⁶⁶_{Mar., '94} observed a case of spontaneous gangrene following a wound of the radial nerve. Didier ²⁰⁸_{July 1, '94} reports a case of ulceration, occurring at intervals, in a young girl 18 years old, since the age of 12. There was no modification in the circulation, the nails were not affected, and there were no malformations such as those consecutive upon serious trophic lesions of the extremities. He classes this case among the dermatoneuroses, without being able to assign any origin in the nervous centres for the lesion of vasomotor innervation.

Bayet ⁸⁶⁸_{May 12, '94} presented a child of 14 years, who, having had ulcerated chilblains during the winter, showed in April a recurrence of the ulceration, analogous to the first, with cyanosis of the hands, which could not be attributed to chilblains. This case would appear to establish a transition between certain forms of chilblains and Raynaud's disease. Hutchinson ¹⁰⁷⁷_{Apr. 18, '94} reports a peculiar case of the affection with a tendency to diffuse scleroderma of the face and of the hands.

F. Noyes ²⁸⁵_{Feb. 15, '94} reviews the many conditions which may be associated with Raynaud's disease, and concludes that symptoms absolutely undistinguishable from those of this affection may appear secondarily in syphilis, leprosy, peripheral nephritis, etc., and that the clinical group of Raynaud's disease should be extended. De Renzi ⁵⁸⁹_{Aug. 31, '94} reports a case involving the four extremities, and which, owing to the accompanying hysterical stigmata, should probably be considered of hysterical origin.

Spillmann, of Nancy, ⁵⁵_{Aug. 18, '94} describes a classical case of Raynaud's disease, and Hale White ¹⁰⁷⁷_{Apr. 11, '94} also reports one, terminating in death, in a young woman affected with mitral stenosis and pulmonary constriction, with pericarditis, acute dilatation of the heart, pneumonia, embolus of the brachial artery, and atrophy of the muscles of the feet. Philip Roy ⁵⁹_{July 14, '94} cites a case affecting the foot in a negro child 12 years old, and Frederick Henry, of Philadelphia, ⁵_{July, '94} two typical cases, Morton ²⁴⁵_{June, '94} another classical case, and Israelsohn ²¹_{May 5, '94} and McNabb ¹¹²_{Sept., '94} each a case.

TETANY.

Camelot ²²⁰_{Aug. 4, '94} reports a case of tetany in a child of 3 years without any rheumatic or dyspeptic antecedents. Owing to the fever present, the author is inclined to consider the case of infectious origin in a predisposed subject. Bernard Vaughan ¹_{Dec. 23, '93} has had the opportunity of observing seven cases. Five were in members of one family; three were nursing mothers; two, young girls at the period of puberty; one, a rachitic subject; and the last an adult man. The symptoms rapidly disappeared under the influence of quinine, the use of which has not been indicated in this affection. The author also inclines to the belief of an infectious origin.

Howard Fussell ¹¹²_{Jan., '94} has observed the coincidence of tetany and epilepsy in the same individual, attacks of stridulous laryngitis being the predominant symptom. The cause seemed to be digestive troubles. Parsons ¹⁶_{July, '94} reports a case of tetany, in a boy 14 years old, which he considers the first case known in Ireland, and which did not present any special features.

Liégois ⁷³_{Mar. 3, '94} reports a similar case, not before cited, of tetany associated with intensely acute pain and with painful paroxysms of external popliteal neuritis in a woman aged 26 years. The tetany disappeared with the paroxysms, but the neuritis persisted, having assumed a chronic condition. Giannelli ⁵⁸⁹_{Feb. 8, '94} quotes three cases of tetany in one of which albuminuria was one of the principal symptoms observed; in another there were vasomotor disturbances. In two of the cases an attack could be induced by pressure upon a painful point in the vertebral column; in one the right side was principally affected, and in another the attack began in one side only. Nicolaijevic ¹³_{Mar. 15, '94} reports a case of tetanic contractions which appears to be nothing more than a case of common hysteria. Heim ¹³_{Mar. 15, '94} cites cases of tetany occurring during the course of gastric ectasia, accompanied by mechanical excitability of the nerves. These cases are serious and often terminate in death. The contractions are painful and often extend to the face. The author does not admit the reflex theory of Müller, but considers a modified chemical disorder of the stomach as the primary cause.

Hoche ³¹⁹_{Aug. 4, '94} recommends curarine, in doses of from 0.0002 to 0.0007 gramme ($\frac{1}{320}$ to $\frac{1}{92}$ grain), in grave cases of tetany with contraction of the laryngeal and respiratory muscles. This dose,

which is much smaller than that indicated by Hoffmann, may, nevertheless, give rise to symptoms of paralysis.

SPASMS AND TICS.

Spitzer, of Vienna,⁸⁶⁶
Mar., '94 describes the case of a boy, aged 15 years, who, when excited or attempting to utter difficult words, performs the following spasmodic movements: Wrinkles the forehead, followed by repeated twitchings of the left side of the face and lingual spasm so that not a single word can be distinctly uttered. Frequently the lightning-like contractions spread to other muscles of the body; the shoulder is raised several times, the trunk is inclined backward, and the patient jumps backward a few steps. Epileptiform seizures are said to have occurred during childhood. Rosenthal regarded the case merely as one of stuttering.

Noir, of Paris,²⁰⁸¹
'93 distinguishes between simple convulsive tics characterized by violence of movements and spasmodic appearance (electric shocks and pseudo-athetoses) and the co-ordinated tics, of which the movements are slower, sometimes rhythmic, sometimes arrhythmic, and to which may be added echolalia, coprolalia, and echokinesia. The "tics of ideas"—true mental affections—may, in impulse tics, affect a motor form, which may be regarded as constituting a separate class of genuine tics.

Saquet¹²⁷
Mar. 12, '94 reports a case of professional cramp in an ironing-woman whose shoulder, arm, and hand were attacked by a non-rhythmic, choreiform trembling, with contraction of the thumb. There were, besides, spasmodic contractions of the orbicularis oris on the right side, with twitching of the trapezius, as well as a slight trembling of the tongue. The Swedish-movement treatment brought about considerable improvement.

Gallerani and Pacinotti²⁴²
Aug., '94 cite a case of reflex spasm of the lips, tongue, and throat due to a wound of the left occipital nerve. There were intermittent contractions of the muscles of the neck on the left side, with temporary difficulty of mastication and deglutition. Excision of the painful cicatrix, probably affecting the anastomoses with the cervical plexus and with the hypoglossus, caused the disappearance of the symptoms.

Sommer³¹⁹
July 7, '94 publishes the case of a woman in which diagnosis was impossible, even after histological examination, and he

therefore regards the case as one of nervous disease, *sui generis*. From the age of 16 she was subject to troubles of locomotion, and at 26 had generalized myotonia without paralysis, myoclonia, inco-ordination of the associated movement in the region of the facial, hysteria, ichthyosis, and hæmophilia. After death from purulent pleurisy the histological examination revealed a thickening of the pia mater, a beginning marginal degeneration of the median region of the lumbar spinal cord, which presented the following peculiarities: The posterior columns were unaffected throughout the entire length of the spinal cord, the lateral and anterior columns were affected at different points to a greater or less extent; in the upper portion of the cervical cord zones of degeneration could be seen, extending, in depth, from the marginal degeneration in the domain of the anterior columns, which zones appeared to be of a systematic character. There were also deeply-seated layers of degenerated fibres, and Goll's columns were degenerated. The direct pyramidal tract of the left side and the crossed pyramidal tract contained more fibres than the right side. There were, thus, morphological anomalies and complicated degeneration of the spinal cord, showing itself in the form of non-systematic marginal degeneration and systematic degeneration of Goll's columns.

Brissaud, of Paris, ¹⁷_{Apr. 26, '94} in two clinical lessons at the Salpêtrière on tics and spasms, dwells upon the difficulty and sometimes impossibility of distinguishing one from the other when no etiological information is obtainable. He presented two patients, one having clonic spasm of the face and the other an ordinary tic. In the first case there was simply a reflex action; in the second the muscular combination implied the intervention of functional centres,—a mode of reaction of the cortico-spinal anastomosis. This question of tic and spasms of the neck and face is one of the most difficult problems of nervous pathology. Cottell ²²⁴_{Dec. 30, '93} also publishes a case of clonic spasm of the cervical muscles. Felix Semon ¹¹_{Mar., '94} showed a singular case of functional spasm of the muscles closing the jaws, manifesting itself only in the act of opening the mouth to speak, and not in eating or under any other circumstance. Moyer ⁹_{Feb. 24, '94} noticed, in a syphilitic, spasms of the forearms, with trophic troubles and trembling of the tongue, probably due to an irritative lesion of the cerebral cortex.

Gerhardt ²_{July 14, '94} reports a case of clonic spasm of the head, supervening after an accident, and extension of the same to the muscles of the larynx. Hysteria may assume this form as well as all other nervous affections. De Renzi ⁵⁸⁹_{Mar. 10, '94} cites the history of a case of hysterical spasm of the sterno-cleido-mastoid, complicated by anosmia and post-hemiplegic hemichorea.

Dominico Massaro ⁹⁹⁶_{July 10, '94} has published a work on twenty-six cases of geniospasm occurring during five generations. His conclusions are as follow: 1. Among the different forms of facial tic there is one characterized by accessory, involuntary, clonic contractions of the muscles of the chin, which may be termed geniospasm. 2. This tic is manifest from the time of birth, is of variable duration in different individuals, but is transmitted by direct heredity, and, having missed one generation, is not reproduced in those following. 3. This condition, persisting during five generations, did not give rise to true degeneration of the nervous system.

Lange ³³⁶_{Aug. 21, '94} reports a case of spasm, with jerks of the tongue, in a non-hysterical woman aged 46 years. The tongue was projected outside the mouth, and this could not be prevented except in speaking. Elongation and resection of the hypoglossal nerve gave no result, section of both genioglossal nerves alone producing amelioration of the symptoms.

MUSCULAR SPASMS.

Mills and McConnell ¹¹⁹_{Apr. 28, '94} cite a case of spasm of the pronator muscles in a compositor. It is well known how difficult and how rarely successful the treatment of this affection is. The method successfully adopted by Leonard Corning ¹_{Apr. 11, '94} consisted in injecting oil into the affected muscles and immediately congealing it by extremely cold applications. He thus obtained, in a single sitting, the almost total disappearance of a clonic spasm of the splenius.

Moussous, of Bordeaux, ¹⁸⁸_{May 6, '94} presented a little girl, 11 years of age, subject to very pronounced stuttering from the age of 3 years. At the same time there were muscular spasms coinciding with those of the tongue as well as the other muscles used in the articulation of words. These spasms were particularly noticeable in the region of the extensors of the vertebral column and sometimes in that of the flexors of the thigh and the extensors of the

arms. Parkes Weber ⁵_{May, '94} reports a case which shows that cramps occurring in one extremity may, although caused by arterial obliteration, not be accompanied by other symptoms of intermittent limping. The case is that of a man who, in 1889, had the left common iliac artery obliterated by an accident. He is now able to get about fairly well, and has not noticed anything analogous to intermittent claudication of the limb as described by Charcot, though when sleeping with both legs drawn up he is awakened by cramp in the left leg. In comparing intermittent claudication with angina pectoris, which certain authors—as Huchard, for instance—attribute to cramp of the cardiac muscle under the influence of stenosis of the coronary arteries, he deduces from this case that this theory is not absolutely tenable in either affection.

NEURITIS.

T. C. Railton, of Manchester, ²_{Nov. 4, '93} witnessed a peripheral neuritis, in a child of 10 years, after arsenical treatment. Having been attacked by chorea, she was taken to a hospital, where Fowler's solution was administered for twenty-one days. During the treatment digestive troubles appeared, and, two days after its cessation, desquamation occurred. Ten days later the little patient was unable to walk alone, and complained of pains in the arms and legs and pricking sensations in the feet. Abolition of the tendon reflexes occurred, and the muscles of the legs lost their faradic reaction and showed degeneration reaction. The patient was unable to button her clothes, and it was impossible for her to bring together the thumb and little finger of the right hand. Slight traces of albumin appeared in the urine. Cecil Purser, of Sydney, ²⁶⁷_{Sept. 15, '93} also reports two cases of peripheral neuritis consecutive upon the use of arsenic, and Chas. T. Potts ¹¹²_{Apr., '94} saw a similar case. Having under treatment a little girl 9 years old, affected with chorea, he administered Fowler's solution in increasing doses, beginning with 3 drops three times a day; at the end of three weeks the patient was taking 10 drops, but it was necessary to reduce the dose by one-half owing to a violent irritation of the stomach and kidneys. Three weeks later she experienced great difficulty in walking, and the trouble increased so rapidly that, one week later, she was obliged to go up stairs on her hands and knees. There was no pain, and no sensory symptoms were

present. Much atrophy of the muscles of the legs and thighs, abolition of patellar reflexes, and reaction of degeneration in the muscles of the external portion of the feet were noted. On discontinuing the Fowler solution and having recourse to electricity, there was rapid amelioration, and recovery was almost complete at the end of two months. The experimental researches of Lucien Béco, of Liège, ⁹⁴_{Apr., '94} led him to conclude, with Alexander, that it is difficult to cause the appearance of polyneuritis or of myelitis by chronic arsenical intoxication. Although the case may be otherwise in man, it must be borne in mind that other factors may intervene, such as cold, infection, etc.

Howard Tooth, of London, ²_{May 5, '94} reports the history of a woman, 34 years old, addicted to drink, who came to the hospital stating that for two weeks she had experienced pricking sensations in the feet. Fifteen days later she died very suddenly after sitting down upon her bed. The autopsy revealed a cirrhotic liver and granular kidneys. There were no medullary lesions, but a degeneration of all the peripheral nerves was found, with disappearance of the cylinder axes and fragmentation of the myeline.

Under the name of mesoneuritis, Vanlair, of Liège, ⁹⁴_{Feb., '94} cites a special affection of the peripheral nerves. Rénaut has described a rudimentary lymphatic apparatus existing in man, which is, however, complete in the solipedæ. It is situated between the lumbar sheath and the fasciculus nervi, properly speaking. Vanlair gives it the name "*mesonévve*," and proposes that of nodular mesoneuritis for the formation of mesoneural nuclei. These vegetations may be referred to two types, of which the first is essentially composed of true nodular formations. Sometimes the nucleus is represented by a single nodule and sometimes by a certain number of nodules very closely arranged. The nuclei usually occupy the mesoneural space, being only occasionally found in the interior of the fasciculus. They are connected with the perineurium on the one side and with the nerve-fasciculus on the other, sometimes by a simple reticulum or net-work and sometimes by a true alveolar process. The entire mesoneural apparatus may be compared to a spider-web stretched horizontally. The nuclei of the second type appear upon the perpendicular sections of the axis of the fasciculus like translucid areas, slightly more colored than the

perineural sheath; they are transversely oblique, and the external contour, largely sessile, conforms exactly to the internal surface of the sheath, while the internal border only slightly projects toward the centre of the "*neuricule*." Between the lamellæ a quantity of vacuoles are found. Besides these typical forms, there exist other intermediary and composite varieties.

Ritchie ²⁴³_{May, '94} reports a case of peripheral neuritis following influenza, with entire recovery. W. P. Spratling, ⁹⁴_{Feb., '94} of New York, states that tea taken in large quantities may cause a multiple neuritis, and to support his theory cites the case of a man, 30 years old, who, up to 1892, had drunk but little tea. From that time on he took it in considerable quantities. One day he experienced a sensation of heat in the right hand and a portion of the forearm. Serous vesicles appeared on the outside of the first and second fingers, with slight hyperæsthesia of the teguments of the hand and diminution of the thermal sense. Weakness and irregularity of the heart's action were also noted. The use of the tea was discontinued, and after six weeks all the symptoms disappeared. The second attack occurred in January, 1894,—four months after the end of the first. The patient had again become addicted to the immoderate use of strong tea. He suddenly felt a pain in the right wrist, with sensations of heat and heaviness and darting pains; then a similar pain in the right shoulder, extending to the axilla and arm, following the course of the median nerve. The slightest friction in the region of the axilla caused severe pain. Between the first and second phalangeal articulations small, hard, deep-seated nodules appeared. There was extreme weakness and great difficulty in writing. The same treatment—discontinuation of the tea, exercise in the open air, and substantial food—caused total disappearance of the symptoms in six weeks. Alibrand, ²¹²_{Aug. 10, '94} of Orléans, publishes a case of rheumatic neuritis of the ophthalmic branch of the trigeminus and of the superior maxillary nerve, treated and cured by salicylate of soda in successive doses of 6, 8, and 10 grammes ($1\frac{1}{2}$, 2, and $2\frac{1}{2}$ drachms). T. Davies Pryce ⁴⁷_{Autumn, '93} distinguishes two forms of diabetic neuritis,—one motor or paralytic, the other sensory. In his opinion, diabetic neuritis is not caused solely by a specific toxic agent, but is principally the result of vascular changes and of denutrition.

Pierre Marie, ¹⁴_{Sept. 2, '94} in a report on peripheral neuritis, discussed the symptoms, diagnosis, and pathological anatomy, and dwells specially upon the question of pathogeny. While admitting the central origin of typical polyneuritis, he does not *a priori* deny in all cases the peripheral origin, as in leprous neuritis and certain cases of vascular neuritis. It therefore becomes necessary to distinguish between the neuritis of central and that of truly peripheral origin. Babinski, Rénaut, Pitres, Pierret, and Régis have, in turn, taken up the same subject. Babinski ¹⁴_{Aug. 10, '94} states that the term "peripheral neuritis" should not imply that the lesions of the nerves are primary and that the nervous system does not present any modifications. It simply signifies that the changes in the nervous system made patent by our means of investigation are localized in the nerves, or are much more pronounced there than in the central nervous system. In the discussion Rénaut, of Lyons, ¹⁴_{Aug. 26, '94} presented several anatomical points. Parenchymatous and segmentary neuritis are already well known, but it now remains to study and carefully describe the interstitial variety. Pitres, of Bordeaux, ¹⁴_{Aug. 26, '94} recognized three main categories of peripheral nerve-alterations: those of local; those of general, toxic, or infectious; and those of central origin. The first class comprises the neuritis due to cold, compression, and the presence of a living organism in the nerve (leprosy). Those of general origin are either toxic (lead, alcohol, mercury, arsenic, etc.) or infectious (diphtheria, typhus, tuberculosis, eruptive fevers, grippe, etc.). Of the neuritis of central origin there are two varieties, according as the pre-existing lesion of the nerve-centres is located in the spinal cord (polymyelitis, tabes, etc.) or in the brain (hemiplegia, general paralysis, etc.). Régis, of Bordeaux, ¹⁴_{Aug. 26, '94} in discussing the relationship between polyneuritis and insanity, considers that there are two different manifestations of the same cause (intoxication or infection), which may present themselves either alone or associated.

H. N. Moyer, of Chicago, ¹⁸⁵_{Nov., '93} observed a case of neuritis of the median nerve following a surgical intervention. The patient having been wounded in the wrist, persisted in working, and the wound became poisoned, causing lymphangitis, which necessitated several incisions, of which one was in the palm of the hand and two on the forearm.

Emilio Perrero⁹⁹⁷_{Jan. 4, '94} reports two cases of syphilitic neuritis. The first was one of secondary neuritis of the left brachial plexus and the second a tertiary polyneuritis. In all cases of neuritis in which syphilis is recognized it is well to investigate as to whether the patient has not immoderately used the mercurial treatment; for a neuritis of mercurial origin must not be mistaken for a syphilitic affection. The diagnosis is evident when the administration of mercury is injurious, instead of beneficial, to the patient.

Mott²_{Mar. 3, '94} writes concerning a patient treated at the Charing Cross Hospital. Previous to entrance he had, for several weeks, experienced chills, sweating, and epistaxis. The actual condition was pain, swelling, and redness of the right leg and arm, with albumin and blood in the urine. There was no cardiac or pulmonary lesion. Reaction of degeneration in the muscles of the left arm and leg and, several days later, a beginning of this reaction in the members of the right side coincided with an exacerbation of the fever. Pronounced anæsthesia was accompanied by analgesia in the paralyzed portions. The rectum and bladder were not affected. A diagnosis of infectious neuritis was made.

Ferguson, of Toronto,⁹_{Jan. 6, '94} saw five cases of sudden death in patients suffering from ascending neuritis. He was able to perform an autopsy and confirm the diagnosis in three of the cases. S. R. Macphail²⁷⁸_{Jan. 1, '94} witnessed, among the insane patients of the Derby Borough Asylum, several cases of peripheral neuritis consequent upon influenza, in which he recognized an infectious origin. Hulke⁶_{Mar. 31, '94} treated, at the Middlesex Hospital, a patient suffering from sensory peripheral neuritis of the teguments of the buttocks, the penis, the scrotum, and the posterior surface of the thighs, the legs, and the external portion of the feet. Questioning the patient revealing syphilitic antecedents, specific treatment was inaugurated, which produced a rapid amelioration.

Thomas Buzzard⁶_{Nov. 18, '93} describes certain symptoms and varieties of multiple neuritis. It is important to first determine the immediate cause of the affection and then to suppress it, as far as possible, or to immunize the patient against its action. In advanced cases the nerves are degenerated, and it requires months for the regeneration of the nerve-tissue. The palliation of the severe pain should be aimed at, and nutrition of the body is important. Massage and electric currents may be useful in maintaining, as

far as possible, the muscular system in its integrity up to the time when nerve-impulsion may again be established.

Savary Pearce, of Philadelphia, ²⁴²_{May, '94} reported, at the Neurological Society of that city, a case of multiple neuritis which, in point of rapidity, order, and extension of the paralytic symptoms, greatly resembled Landry's disease.

H. D. Marcus, of Philadelphia, ¹⁹_{June 9, '94} treated a young woman, 34 years old, who, upon her entrance to the hospital, presented the following symptoms: Variable mental condition, sometimes normal, sometimes disturbed; she takes all the persons surrounding her for acquaintances. Occasional delirium and hallucinations. Complete paralysis of both legs; partial paralysis of the arm above the elbow. Anæsthesia of the lower limbs, most pronounced below the knees, and diminishing by degrees in ascending. Pressure upon the nerve-trunks of the lower members occasions severe pain. Vasomotor and trophic disturbances. Marcus, considering the antecedents of the patient, diagnosed multiple alcoholic neuritis.

Bergonié and Bordié, of Bordeaux, ¹⁴_{Apr. 22, '94} saw a peripheral neuritis in a runner on stilts, caused by compression of the external popliteal sciatic nerve between the upright of the stilt and the fibula. Gurgo Francesco, of Turin, ⁵⁸⁹_{June 20, '94} treated two women for polyneuritis, both presenting, as a particular symptom, a generalized œdema. One of them died of purulent pericarditis, and at the autopsy the diagnosis of peripheral neuritis was confirmed. The writer questions whether the œdema was not the result of irritation of the vasomotor nerves.

BERIBERI.

Nepveu, of Marseilles, ⁴⁶_{June 15, '94} made an histological examination of the organs of a man who died of beriberi, and concludes that the disease is an infectious lesion rapidly destroying the epithelium of the viscera (kidney, liver) and the muscles, particularly the cardiac fibres, by granulo-fatty degeneration; and that it causes the production of masses of new cellules in the connective tissue of all the principal organs (liver, spleen, kidneys, spinal marrow, and brain) and of certain nerves, the vagus in particular. Beriberi is therefore neither an endemic polyneuritis nor a degenerative multiple progressive neuritis. The poison invades the connective tissue

of all the organs, including the spinal cord and the brain. There is also an interstitial lesion of the principal organs, sometimes even sclerogenous. The author thinks that it may be an auto-intoxication of interstitial origin, which would indicate that it might be merely necessary to change the diet and abode in order to induce recovery in patients seen at the beginning of the disease. Firket publishes ⁵²_{Apr. 23, '94} a case which led him to inquire whether the disease was not analogous to malaria, and whether the two affections do not spring from the same infectious germ, the localization alone differing, the blood being affected in the febrile disorder and the nerves in beriberi. Kirchberg, of Nantes, ¹²⁷_{Dec. 12, '93} saw three cases in which the cause of the disease seemed to be the use of old preserves, perhaps badly made, but in which the pathogenic agent was not to be found.

Pekelharing and Winkler, ⁶_{Nov. 18, '93} from anatomical researches, believe that it is a multiple neuritis caused by a special micrococcus. Bently, ²_{Feb. 10, '94} who has made a post-mortem examination of nineteen cases, considers, on the contrary, that the primary lesion is central, and not peripheral. Ashmead, of New York, insists ²⁰⁰_{Nov. 25, '93} ⁵⁹_{Apr. 14, '94} that it is due to poisoning of the blood by carbonic acid, and gives as a proof ²⁰⁰_{Dec. 23, '93} the salutary action of the altitude cure, in spite of humidity.

Glogner, ²⁰_{B. 132, p. 50} having studied the modifications of electrical reactions in beriberi, finds a relationship between the acceleration of the pulse and the diminution of galvanic excitability, though not in all cases.

The Spaniards have this year made an arduous study of beriberi. Summers ¹⁰¹⁶_{July 24, '94} and Gonzales y Garcia ⁴⁴¹_{Oct. 1, '93} publish reviews, and Léon de Mendoza ⁷⁷³_{Dec. 5, '93} states that beriberi is now endemic in the islands of Cuba and Manilla. Maseras ⁶⁶²_{'94} considers myositis as the primary and principal element in the evolution of morbid phenomena.

CHOREA.

The etiology and pathogenesis of chorea are constantly being studied with interest. Pietro Guizzetti, of Parma, ⁵⁸⁹_{Nov. 13, '93} reports a case of Sydenham's chorea, ending in death, in which, as an autopsy was made eleven hours after death, a very careful bacteriological and histological examination of all the organs, and of the nervous system in particular, was possible. Nevertheless, the results were

negative. None of the micro-organisms described in chorea were found, nor any others arising from any infection. The existing lesions of endocarditis may be explained without the inference of the presence of an infectious agent. The alterations of the nervous system (punctiform hæmorrhage, intense congestion of the brain) would lead to the hypothesis of a cerebral origin of chorea. Dana, ⁵_{Jan., '94} on the contrary, found special microbes in an autopsy. There was chronic leptomeningitis of the convexity of the brain, and hyaline bodies were found in the cortex. Slight meningitis of the upper portion of the cord and also a slight encephalitic meningitis existed. Diplococci were found in the proliferated tissue between the meninges and the brain. This case, however, will not serve in establishing the pathogenesis of Sydenham's chorea nor the microbial theory, the patient being a man, 34 years old, subject, since the age of 10, to attacks of chorea every two or three years, qualified, since the first attack, as Sydenham's chorea, having occurred after acute rheumatism.

Whittaker ⁴²⁶_{Mar., '94} reports and compares two cases of this affection, —one in a little girl, the other in a pregnant woman. Eskridge cites ⁸¹_{Nov., '93} a case in a girl 14 years old, and recommends absolute rest in bed as the basis of treatment except in very mild cases. Mackey, of London, ⁶_{Jan. 20, '94} has observed a case of chorea with mitral insufficiency, following rheumatism. Large subcutaneous nodules developed along the vertebral column and were disseminated over the back. They disappeared almost entirely as the disease was cured. Igeboldine, of Moscow, ³¹_{Dec. 9, '93} describes a case of St. Vitus's dance of paralytic character, in a boy 7 years old. The paralysis developed very gradually, the affection having at first presented the ordinary character. The paralytic symptoms afterward disappeared and the choreic movements recurred. Jamsin ⁴⁵⁴_{Dec., '93} reports a case of partial hemilateral chorea in a soldier, 21 years old, who had recovered from articular rheumatism two months before. The attack came on after a violent emotion. It is suggested that this was more likely an hysterical affection.

Achard, of Paris, ³¹_{Jan. 10, '94} reports an interesting case showing the hereditary transmission of an affection which, though differing from chorea, nevertheless bears a certain relation to it. His patient was a boy, 19 years old, who had recently been subject to choreic movements, most marked on the left side. He also shows

athetotic movements on the right side. The upper members, particularly the left, are agitated by a slight, rhythmic, oscillatory trembling, which is hereditary. This is one of the mixed cases to which the name of "athetotic choreic syndrome" has been applied. The existence of the hereditary tremor in this patient clearly proves the original weakness of the motor system. J. Russell³²_{Jan., '94} reports a curious case of hereditary chorea in twins whose father was also affected by chronic chorea.

The treatment of chorea is always the subject of a large number of communications, but as yet no specific has been discovered for the affection. Lash¹_{Oct. 21, '93} advises quinine in progressive doses, according to Wood's method. Stuver⁴²⁶_{Feb., '94} recommends repose and antipyrin. Verhoogen⁷²⁰_{Nov., '93} has successfully employed franklinization in the form of static baths. Sharples²⁴²_{Oct., '93} has seen nitroglycerin exaggerate the choreic movements instead of calming them, as has been stated by certain authors. Adams⁶_{Feb. 10, '94} cites a case in which neuritis made its appearance during the treatment of chorea by arsenic. It will thus be seen that this method of treatment, which Harold Moyer⁷²_{Feb., '94} recommends in the form of hypodermatic injections, may present certain inconveniences. Dujardin-Beaumetz⁶⁷_{Mar. 15, '94} in reviewing the various treatments proposed for chorea, justly concluded that there is none which is suitable in all cases, and that, although there are some which may prove useful, we have not made much progress since the time of Bouteille.

NEURALGIA.

Jarré¹⁰_{Dec. 5, '93} demonstrates that so-called reflex neuralgias and those affecting the trigeminus, of which the cause is not discernible, are most frequently due to a dental arthritis,—an alveolo-dental osteoperiostitis,—consecutive upon the evulsion or the loss of teeth, and giving rise to peripheral lesions of the alveolar nerves. Resection of the alveola or of the alveolar edge suffices to cause recovery in these cases. Duplay¹_{Aug. 29, '94} reports a case belonging to this category, which he designates as the neuralgia of the toothless,—a name given to this affection by Gross, of Philadelphia. Wysard⁶_{Mar. 24, '94} reports a case of neuralgia of the trigeminus of malarial origin,—as proven by the periodicity of the attacks, their regular return, the consecutive prostration, the fact that the patient was in a malarial region, and also by the

recovery of the patient under quinine sulphate. Laquer ⁶⁸_{Aug., '94} cites three cases of very intense neuralgia of the trigeminus, with cerebral disturbances (hallucinations) in two cases, and aphasia, with paræsthesia of the face and of the right arm, in the third.

Among the dental causes of neuralgia of the trigeminus, M. H. Boennecken ⁴_{Nov. 1, '93} cites, besides caries, hyperæmia of the pulp and the deposit of calcareous matter. When an electric light, with a reflector, is placed behind the tooth, the healthy pulp presents a rose-colored appearance, while the diseased pulp is dark-colored. The calcareous deposits cause hyperæmia, cellular infiltration, and a persistent neuralgia. Immediate relief follows the extraction of the tooth. Drainage, cauterization, and obturation may be resorted to.

Alexander Johnson ¹_{May 5, '94} reports an interesting case of neuralgia of the great occipital nerve associated with symptoms of a lesion of the cervical sympathetic, which disappeared after the destruction of the adhesions between the upper cervical ganglion and the internal carotid by operative measures. The neuralgic symptoms re-appeared, however, after six weeks.

A. Voisin, of Paris, ¹⁴_{Jan. 10, '94} in the case of a patient subject to melancholia and neuralgia of the trigeminus since 1870, was able to demonstrate, after her death, the existence of a cerebral lesion limited to a portion of the ascending frontal and parietal sulci on the right side, at a point corresponding with the seat of the pain. Craniotomy would here have been indicated.

Gilles de la Tourette, of Paris, ⁵⁹_{Mar. 31, '94} refers to the existence of hysterical paroxysms having the character of facial neuralgia, and reports the case of a man, 54 years old, who, in addition, presented the classical stigmata of hysteria.

Mann ³²⁶_{51, No. 6} studied the muscular disturbances and the deviation of the vertebral column in sciatica, and found true paresis of the flexors of the leg upon the thigh, in nineteen out of twenty-seven cases, sometimes with diminution of electrical contractibility and slight atrophy of the muscular masses. He is therefore of opinion that not only the sensory nerves, but also the motor nerves, are frequently affected. The deviations of the column are due to paresis of the muscles.

De Cérenville ¹⁹⁷_{Nov. 20, '93} has resorted to faradization of the crural artery in cases of sciatica with atrophy, and has rapidly obtained a

diminution of the atrophy, but not of the pain. Vadon, of Lyons, ²¹²_{Mar. 10, '94} calls attention to a new sign of sciatica, consisting of a peculiar gait, which is demonstrated by means of impressions, the angle formed by the diseased foot with the antero-posterior axis being fourteen to fifteen degrees greater than normal.

Personali ⁹_{Mar. 20, '94} is of opinion that in many cases sciatic neuralgia is only secondary. It is the result of the extension into the sciatic nerve of an inflammatory process developed in the connective tissue which surrounds the coxo-femoral joint. Maux ¹²⁶_{July 15, '94} states that sciatica is often accompanied by paresis, which invades the domain of the other branches of the lumbar plexus. When the paresis extends to the sacro-lumbar muscle it causes scoliosis with the convexity directed to the diseased side. When there is double paresis of the abdominal muscles there is lordosis of the vertebral column. Schreiber ⁹_{Sept. 22, '94} thinks that, in many cases in which the patients complain of sciatic neuralgia, there is simply a rheumatic process affecting the tendons, aponeurosis, and the ligaments in the region of the hip-joint.

Burnett, of Kansas City, ⁸⁰¹_{Mar. 10, '94} advises, in the treatment of sciatica, injections of morphia as near as possible to the nerve. For combating the neuritis the most important factors are repose, cold applications, and continuous galvanic current. Repose does not merely mean the prohibiting of moving about, but also the immobilization of the affected member. The best method is to oblige the patient to remain in bed and to fasten the limb by means of a splint. The author prefers an ice-bag placed upon the course of the nerve to the use of sprays of ether and chloride of methyl.

Obolenski ⁴_{Feb. 12, '94} reports cases of interstitial and splanchnic neuralgia in syphilitic patients where no other cause than the syphilis could be found. Basing himself upon the frequency and intensity of the pains in the night, the author resorted to the specific treatment, and the result justified his opinion. He considers that syphilitic neuralgia may be due either to simple hyperæmia of the nerve-tubes or to their degeneration, and that in certain cases, as in two which he reports, nothing pathological is found, the electrical reaction being in no way modified. In a third case, more complex, that of a patient with aneurism of the arch of the aorta, a double intercostal neuralgia also yielded to an anti-

syphilitic treatment, resorted to for osteocopic pains, nocturnal accessions, etc., notwithstanding the denial of the patient as to any syphilitic antecedents.

Bosc, of Montpellier, ³⁶⁰_{Aug. 9, '94} has published an interesting article on anterior metatarsal neuralgia, or Morton's disease. Benedikt, of Vienna, ⁴¹_{Aug. 9, '94} subdivides neuralgias into three categories: those of the nerve-trunks and plexuses, those of the nerve-roots (excentric neuralgia), and finally the peripheral pains of toxic origin. He gives the principal symptoms of each variety and the modes of treatment.

Gittermann ⁴¹_{May 28, '94} denies the existence of essential neuralgia, and reviews all the diatheses, infections, and intoxications which may give rise to, and which in all cases explain, the existence of the neuralgia. He recommends electricity as one of the best therapeutic measures and one which has, in his opinion, been greatly neglected.

MIGRAINE.

Gradle, of Chicago, ⁹_{Mar. 3, '94} estimates that nearly one-half the cases of migraine are due to astigmatism, as is proven by the fact that the attacks disappear entirely upon the use of appropriate glasses. Hypermetropia causes headache, but not the true migraine. W. Hind ²⁶_{Oct. 2, '94} has, since his childhood, been subject to frequent attacks of migraine. For many years an attack followed several hours after eating uncooked blackberries. Later on, strawberries, raspberries, and plums taken in the same way produced the same effect. The author attributes migraine to two principal causes: (1) poisoning of gastric origin; (2) cerebral fatigue.

Lauder Brunton, of London, ¹⁵_{Feb., '94} recommends, in all cases of headache, a careful examination of the eyes, teeth, nose, ears, and throat, as the cause may be some local irritation. Eighty or 90 per cent. of headaches are due to eye troubles, 10 per cent. to dental lesions, and about 5 per cent. to affections of the nose, throat, etc. If antipyrin do not always succeed in curing headache it is because very frequently it is given too late, absorption being arrested by the violence of the attack. The author recommends bromide of potassium and salicylate of soda.

Clauss ²⁵⁶_{Sept. 2, '94} is of the opinion that it is wrong not to interfere in migraine, as certain practitioners advise, but it is first necessary

to minutely study the constitutional condition of the patient. The principal causes of migraine are arthritism, the nervous diathesis, chlorosis, anæmia, and all conditions which weaken the resistance of the nervous system. It is therefore necessary to strengthen the latter. Hydrotherapy and the chalybeates may here bring about excellent results. In addition to the constitutional condition the causes of migraine are multiple, and a search for them, with a view to prophylactic intervention, is a difficult task. Ocular disturbances exert a great influence; they are principally troubles of refraction or insufficiency of the muscular apparatus. Frequently migraine improves greatly between the ages of 40 and 50,—the period when the function of accommodation weakens. The author, with Seguin, recommends the use of appropriate glasses, less use of the eyes, and the employment of mydriatics, which diminish the effort of accommodation and consequently the fatigue. Thompson advocates ²_{Apr. 28, '94} the use of ergot in very large doses, to be given as soon as the first premonitory signs appear. The patient should go to bed and remain quiet. Rendu ²¹²_{July 10, '94} recommends, according as the case may be, antipyrin, salicylic acid, aconitine, veratrine, etc. Delmis ¹⁰⁰_{Feb. 9, '94} recommends aconitine. Overlach ⁹⁹⁶_{Apr. 10, '94} advocates migrainine, a new specific for migraine consisting of a mixture of antipyrin, citric acid, and a small quantity of caffeine. Squire, ¹⁸⁶_{Aug., '94} basing himself upon the theory of periodical cephalalgia due to uric acid, recommends phenacetin and bromide of potassium during an access. William Thomson ⁵⁹_{Mar. 17, '94} advises the use of ergot, and Neale and Bays, of London, ⁶_{Nov. 4, '93} have had good results with an electrical percussion instrument.

NEURASTHENIA.

Fournier, of Paris, ¹⁴_{Oct. 8, 11, 15, '93} is surprised that up to the present time syphilis has been so little considered in the etiology of neurasthenia. Neurosis, although principally manifested in the early portion of the secondary period, may also be met with in more advanced stages of the affection and may occur, without any other specific manifestation, as an isolated, independent, exclusive symptom. The author has seen cases of neurasthenia in the second and third year of infection, more rarely in the fourth, fifth, and up to the seventh year. It frequently shows itself as one of the following types:—

1. An ephemeral type,—that of neurasthenic cephalalgia.
2. A more complete type, much more rare, and which, according to the predominance of the cerebral or medullary symptoms, resembles the affections designated as cerebrasthenia, or myelasthenia.

It is very important to differentiate between this neurasthenic cephalalgia and the premonitory cephalalgia of specific encephalopathies. The latter is always intense and agonizing and has the peculiarity of usually occurring in nocturnal exacerbations, while neurasthenic cephalalgia, on the contrary, is almost exclusively diurnal and is more a painful sensation than an actual severe pain. Moreover, the specific treatment, which is absolutely inefficacious in the neurasthenic form, is, with rare exceptions, all-powerful in specific cephalalgia. The duration of the trouble is in itself significant, and a cephalalgia having already existed several months, *a fortiori* several years, should be regarded as neurasthenic. The second form of syphilitic neurasthenia is remarkable for the multiplicity and diversity of its manifestations,—anæsthesia, either muscular, digestive circulatory, or genital; psychical and moral depression; general erethism of the nervous system; and finally a singular emotional excitability. In the face of all these symptoms, the physician finds himself exposed to selecting the wrong road and to diagnosing, according to the predominance of the symptoms, a disease of the brain or of the spinal cord, but an attentive research for the signs proper to each of these affections will prevent error.

There is a form of neurasthenia, of specific origin, which Fournier designates as a vague and benign variety; it differs from the other types in the two following characteristics: 1. As regards intensity of the symptoms, it never goes beyond a moderate degree, allowing the patient to lead his usual life and to continue his occupation, though sometimes with some difficulty. 2. As regards variety of nervous symptoms, no single one seeming to predominate over the others.

The author concludes that it is not at all surprising that syphilis causes neurasthenia, but that it would indeed be astonishing if it did not.

Rockwell, of New York, ¹_{Nov. 18, '93} specifies, as essential causes of neurasthenia, overexertion and disorders of nutrition caused by

repeated toxic influences; food and drink also play an important part in the development of the malady. Thus, in avoiding all excesses, carefully watching the diet, etc., the disorder may be successfully combated.

J. Mendel⁷⁸¹_{Nov., '93} has observed several cases of neurasthenia with special manifestations in the mouth. The symptoms ranged from tactile oversensibility of the teeth and hyperæsthesia of the dentine and mucous membrane to severe trophic troubles capable of modifying the tissues themselves and of causing pronounced disturbances.

Bremer, of St. Louis,¹³⁹_{Jan., '94} questions why so many physicians do not consider neurasthenia as a neurological entity. In his opinion, this affection is as well defined as typhoid fever, with this difference, however, that the co-existence of all the characteristic symptoms is not the rule. It is erroneous to consider neurasthenia of more frequent occurrence in the upper classes of society; the hereditary predisposition is the same in both rich and poor, and the author makes the apparently paradoxical statement that, the poorer the individual, the more he is liable to become neurasthenic. After having protested against the numerous remedies and modes of treatment employed, many of which are often more hurtful than useful, he concludes that there is no special treatment for Beard's disease, but that there are different methods applicable to different patients; in a word, it is necessary to treat the individual and not the disease.

Paul Sollier, of Paris, reports a circular form of neurasthenia characterized by alternations of depression and excitement, which occur without intervals. This is an essentially chronic and progressive form, and the prognosis is much more grave than in the common form of the disease. There is practically no treatment.

Coulampis²⁰³¹_{Jan. 26, '94} states that in certain neurasthenics special respiratory troubles are met with, as cough, dyspnœa, and even hæmoptysis.

G. H. Savage, of London,²_{Sept. 8, '94} considers neurasthenia as a disturbance of the peripheral nervous system which is to be compared to general paralysis,—a disorder of the central nervous system. According to him, the two affections have, as common characteristics, irritability and emotional tendencies, weakness of

the will and incapability of fixing the attention, the rare occurrence of hallucinations of the senses, the tendency to exaggeration and a feeling of self-sufficiency, hypochondriacal ideas, the appearance of the disease at the adult age in men, indirect heredity, a propensity to cardiac and pulmonary irregularities, and soporific tendencies. The points of difference are the fact that the one is progressive and fatal and often syphilitic, while the other is not.

A. C. Brush, of Brooklyn, ¹⁵⁷_{Nov., '93} describes a lithæmic form of neurasthenia due to the presence of certain incomplete hepatic products in the blood, generalized vasomotor paralysis, and motor disturbances.

Paul Kovalevsky, of Kharkoff, ⁶⁸⁵_{Sept., '93} cites a type of neurasthenia characterized by nervous heredity, with an unbalanced nervous system and predisposition to nervous and mental affections. From early childhood these patients are delicate and capricious; later on they isolate themselves and shun the society of other children. They are subject to fits of anger and cry or laugh without any reason. They have convulsive movements and experience a sensation of falling from a height. Some learn very readily and others with the greatest difficulty. Sometimes there is such an oversensibility of the scalp that one cannot touch the hair; they also present an exaggerated sensitiveness of the gums, the teeth, and the spinal column. Kovalevsky divides these neurasthenics into two groups: in the one there is great mental instability, in the other unhealthy impulses and inclinations. The course of the affection is variable; it may be cured or it may persist through life with intervals of improvement varying in length. It may also degenerate into any form of disease of the nervous system, or psychosis, and, in particular, the systematic delirium of persecution.

R. Vigouroux, of Paris, ¹⁰⁰_{Oct. 31, '93} regards arthritism and neurasthenia as having a common clinical basis, viz., the overacidity of the organic centres and the diminution of nutritive metabolism. He advises: 1. Diminution of the food-supply for neurasthenics instead of the superalimentation usually resorted to. 2. Bicarbonate of soda, from 4 to 7 grammes (1 to 1½ drachms) per day, for the correction of the urinary hyperacidity. 3. Static electricity. A. Mathieu, of Paris, while agreeing with Vigouroux, that it is

inadvisable to give the patients more food-material than they can assimilate, remarks that there are neurasthenics who eat very little and whom it would be well to feed.

Lafforgue, of Epinal, ¹⁴_{Feb. 28, '94} cites the curious case of a young student who, at different intervals, was subject to the following hallucination: He would go to bed leaving the light burning, and, not being able to sleep, after about fifteen minutes would experience a sensation of pressure upon the posterior surface of the shoulder and the external surface of the left arm. This sensation persisted for about twenty minutes. For seven or eight years there had existed an anæsthetic zone occupying the region innervated by the left circumflex and, as Lafforgue explains, had caused certain abnormal sensations which the troubled brain of the neurasthenic was unable to control, and which, therefore, became transformed into morbid sensations or hallucinations.

Triantaphyllidès, of Batoum, ⁹⁴_{Aug., '94} describes a neurasthenia of malarial origin of which he observed about fifty cases in Caucasia during a period of four years and a half. The affection is principally characterized by psychological, amyosthenic, and vasomotor disturbances; the other symptoms are unimportant. The onset is seldom sudden. The neurasthenia, once established, does not follow a regular course, and sometimes disappears, only to reappear soon after. In recent cases treatment was often promptly efficacious, from 1 to 4 hypodermatic injections of bimuriate of quinine, in doses of from 0.60 to 1 gramme ($9\frac{1}{4}$ to $15\frac{1}{2}$ grains), being sufficient. The recurring cases require a greater number of hypodermatic injections, and inveterate cases are more or less rebellious to quinine. Recourse is then had to the sulphate of cinchonine or cinchonidine. In the beginning a change of climate is very beneficial, but later on this should be accompanied by special treatment.

Oddo, of Marseilles, ⁹²_{Aug. 10, '94} has observed a case of circular neurasthenia, of quotidian alternative form, characterized by periods of short duration, appearance at a fixed hour, and division of each period into regular phases. A peculiar shiver and abundant perspiration first suggested a malarial origin for the affection; but, as the treatment by quinine was absolutely unsuccessful, the author abandoned this hypothesis.

In a neurasthenic patient observed by E. Bagnis, of Livornia,

and C. Baduel, of Florence,⁹⁹⁶_{Aug. 10, '94} the eye had become the centre of all the suffering. Even things only very remotely related to the visual function caused exactly the same disturbances as though they were directly connected therewith. The patient saw all objects coated with a whitish coating, brilliant circles, etc. The authors consider these phenomena normal, due principally to irregularities in the curvature of the crystalline lens.

Love, of St. Louis,¹⁷⁰_{Apr., '94} is of opinion that it is preferable to prevent neurasthenia than to have to treat it, and thinks that the best method is to constitute, for children, a solid nerve-capital, beginning from the time of birth and even before, in acting upon the mothers.

H. B. Deale and S. Adams,⁵_{Apr., '94} recommend, for young neurasthenic women, baths, exercise in the open air, and abstention from any intellectual excitement. As regards clothing, all compression of the thoracic and abdominal viscera should be avoided. Carefully-regulated diet, electricity, hydrotherapy, and massage are recommended. The patients must be watched, all the regulations prescribed written out, and their execution enforced.

R. E. Evans, of Selkirk,²_{Dec. 10, '93} treated and greatly ameliorated the condition of a patient, subject to neurasthenia for seven or eight years, by injection of nerve-substance.

E. S. Reynolds, of Manchester,⁹⁰_{Oct., '93} regards neurasthenia as one of the most difficult affections to treat, requiring great perseverance on the part of the physician and those about the patient. There is no form of treatment applicable to each individual case, and the important point is to discover the true cause of the disease. The author considers that sea-air is prejudicial to neurasthenics, and advises a sojourn in mountainous regions.

Bérillon, of Paris,¹⁴_{Aug. 12, '94} recommends hypnotism for the cure of neurasthenic phobias. In his opinion, the susceptibility to suggestion is much more easily influenced by persuasion than by commands in neurasthenics, the contrary being the case in hysterical patients.

Grasset, of Montpellier,¹⁵²_{Feb. 2, '94} advocates intellectual repose and substantial nourishment in mild cases, with out-door life, moderate exercise, douches or cold immersions, and methodic massage of the entire body every evening. Kola is to be taken at each meal. After twenty days of treatment ten days of rest are enjoined, and,

in grave cases, isolation of the patient in an hydrotherapeutic establishment. In rebellious cases Brown-Séquard's treatment is recommended.

F. X. Dercum, of Philadelphia, ⁸⁰_{Dec. 15, '93} advocates the rest cure as exclusive treatment. The patient should be isolated and obliged to remain in bed. Short periods of massage should be prescribed during the first few days, afterward gradually prolonged. Milk should form the basis of the diet.

Seguin, of New York, ¹⁰⁰_{Oct. 5, '94} gives the following indications for treatment: Very little feculent and amylaceous food; meat in sufficient quantity; at least one quart (litre) of water daily; cold douches of twenty seconds; sponge-baths, followed by friction lasting two minutes; systematized and regulated daily exercise.

MISCELLANEOUS.

André, of Toulouse, ¹⁰⁸⁸_{Oct. 22, '93} had under his observation a mother and daughter, both attacked by a peculiar nervous affection. The mother had for twelve years been subject to violent attacks—becoming more and more frequent—of palpitations with pains irradiating from each side of the neck, a sensation of oppression, buzzing in the ears, and vertigo. After a half-hour or an hour all the symptoms disappeared, leaving only a slight fatigue, which soon wore off. There was no trouble with the heart or aorta and no hysterical stigmata. The daughter had been subject to migraines since the age of 12 years; after her marriage the attacks took on a peculiar character: sudden numbness of one hand and painful twitchings in one side of the face, on the right side if the formication began in the left hand, and *vice versâ*; temporal, orbital, and facial pain; salty taste in the mouth, nausea, ocular disturbances; reading became impossible, as the patient saw nothing but dots; difficulty in moving the tongue and hearing; the voice took on a low tone and seemed to come from below the ground. No scintillating scotomata existed. The attack lasts a quarter of an hour and leaves some temporal pain, which continues during several hours, with slight pyrosis. The author rejects the idea of the affection being neurasthenia, and diagnoses a cerebro-cardiac neuropathy in the case of the mother and ophthalmic migraine in that of the daughter.

According to Lancereaux, of Paris, ³_{Jan. 24, '94} rapid or sudden

deaths generally result from some nervous affection which instantaneously arrests a principal function of the economy. Most frequently it is the excitant action of the nervous system on the heart or the lungs. In cardiac as well as in respiratory syncope there is extreme pallor and arrest of all movement; but, in the first, relaxation of the muscular system and contraction of the pupils occur, while in the latter there is contraction of the muscles of the thorax and of the jaws and dilatation of the pupils. The rational treatment consists in the immediate hypodermatic injection of morphine, and in inducing nausea by the application of a foreign body to the base of the tongue, and finally in inducing artificial respiration.

L. Bauer, of Berlin, ¹_{June 2, '94} reports the history of a boy, 13 years old, who, for three years, had been subject to sudden attacks of fury. One day he was attacked with hyperæsthesia of the right foot, which disappeared after seventeen days. Six weeks later the same symptoms occurred in the left foot; then, at various periods, in both feet. On one occasion hyperæsthesia of the neck with total deafness appeared, lasting thirteen months. The attacks of hyperæsthesia of the feet, which had ceased during the period of deafness, re-appeared after the cessation of the latter. The author regards this case as one of erythromelalgia.

Moutschnik ¹⁰⁶_{Sept. 20, '94} saw a case of erythromelalgia with coincident attacks of intermittent fever. The lesions in the foot occupied the zone of distribution of the plantar nerves and several branches of the posterior tibial; in the hand, that of the radial for the dorsal surface and of the median for the palmar surface. The author is inclined to consider this affection a neurosis of malarial origin.

Morlot and Gallois ²¹²_{Sept. 10, '94} report the case of a man, 48 years old, who entered the hospital for the treatment of eczema of both legs. On examination symmetrical swelling of both arms, thighs, and hips was noticeable, with disseminated granulations, diffuse permanent redness, hyperæsthesia, pricking, intense heat, and pain along the vertebral column. On the body plaques of anæsthesia were found. The author diagnosed neuropathy with trophic disturbances of nervous origin.

Lemoine, of Lyons, ³¹_{Apr. 11, '94} reports three cases of periodic neuropathic crises in arthritic subjects. Melancholia and sexual

impulses predominated, and the attacks appeared every twenty-five or thirty-five days. The author questions whether these periodical psychical paroxysms are not the result of slow accumulations of toxins and their elimination during the menstrual period.

TRAUMATIC NEUROSES.

By J. A. BOOTH, M.D.,

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ALTHOUGH our knowledge of this subject has not been at all increased by the literature of the present year, yet numerous contributions and discussions have served to place it on a more scientific basis and to make it more widely known, so that the terms "railway spine" and "railway brain" are less used. According to the majority of authors traumatic neurosis is not a disease *sui generis*, but rather a symptomatic complex of various functional disturbances, which, under certain circumstances, may even develop spontaneously. Oppenheim has yielded to the philosophical deductions of Charcot, Gilles de la Tourette, and others, and the French school has convinced the German that the shock attending railroad accidents simply develops not the ordinary symptoms of a neurotic diathesis,—such as paralysis agitans, epilepsy, traumatic sclerosis or insanity,—but, nearly always, hysteria or neurasthenia or the two combined. Discussions, bearing more especially upon the pathology and medico-legal relations of such cases, occurred in the American Neurological Association, the Congress of the British Medical Association, the Medical Congress at Wiesbaden, the National Association of Railway Surgeons, and the Boston Medico-Psychological Association.

Semeiology and Diagnosis.—Since the review of last year, the author finds but little of importance on this branch of the subject. Ludwig Mann ⁴_{No. 30, p. 749, '98} contributes a paper on "The Diminution of the Conductive Resistance in the Head as a Symptom of Traumatic Neurosis." The author believes that diminished galvanic resistance in the brain is frequently present in those forms of traumatic neurosis attended with cerebral disturbances, headaches, vertigo, and tinnitus. In the normal persons examined the resistance amounted to 4000 to 6000 ohms. In the cases of

traumatic neurosis with headaches, there were marked deviations of between 1500 and 2500 ohms. This point he regards as of value in the diagnosis of doubtful cases.

In the recent Medical Congress at Wiesbaden the subject of traumatic neuroses was introduced by Strümpell and Wernicke. The former emphasized the fact that the traumatic neuroses do not constitute a single clinical picture, but consist of a group of morbid conditions. He separates those cases with local from those with general symptoms. The pains are often associated with functional motor disturbances. The many other subjective symptoms increase greatly if the patient be minutely questioned. Important objective signs are the slightly hypochondriacal and melancholic mental condition, together with the sensory anæsthesia of the skin and sense organs, such as contraction of the visual fields. In the diagnosis, symptoms depending on arterio-sclerosis and alcoholism must not be confounded with it. The tendency to exaggeration does not show that there is no disease. Wernicke does not think that traumatic neuroses consist in hysteria called forth by injury. The difference between the symptoms complained of and those of organic diseases is to be explained by exaggeration, such as is seen in patients in whom the presence of disease is not to be doubted. Hitzig dwells on the harm done by those who deny the existence of these neuroses. He recommends (1) that the presence of hypochondriasis, neurasthenia, hysteria, or mixed conditions be determined, and (2) that the diagnosis be not made to depend solely on objective signs.

C. P. Freund, of Breslau, ¹⁰⁷_{June 15, '94} attaches the highest importance to a thorough examination of the traumatic lesion in the beginning. Attention should also be paid to the question whether the nervous symptoms complained of might not be attributable to latent diseases anterior to the accident. It is a fact that, for all the numerous sensations complained of, investigation fails to discover any objective connection, excepting, perhaps, a slight increase of patellar reflexes, a trifling trepidation in intended motions, a somewhat increased frequency of pulse, etc.

Concerning the concentric reduction of the field of vision and the cutaneous disturbances of sensibility, the author points out that these phenomena belong to the hysteriform complex of symptoms, and consequently are absent where there is only a neuras-

thenic or psychic affection or where hysteria only manifests itself in motor disturbances. Higier⁶⁷³_{Aug., '94} gives the history of two cases of traumatic neurosis, and remarks that the disease may be diagnosed only after exclusion of organic disorders of the nervous centres and other organs, and that special attention should be paid to the family history, which very often shows predisposition, as well as to the psychical state of the patient.

It now seems to be the general opinion that the concentric reduction of the field of vision and the cutaneous disturbances of sensibility properly belong to the hysteriform complex of symptoms. Hemiaesthesia should always be thoroughly investigated; not alone by means of needles, but also by faradism with the Erb electrode, beginning at the chest near the median line, where the sensation of symmetry is least developed. Trepidation and irritability of the pulse require more exact study. As the most important criterion of a nervous irritability of the heart, in comparison with an organic disease of the same organ, we find that, in the former, a high acceleration of the pulse is easily provoked by psychic influences, while in the latter they usually fail to produce any acceleration of pulse.

Judging from the evidence that has accumulated during the past two years, it is not possible to arrive at any definite conclusion concerning the frequency of changes in the visual fields; and in the most recent discussions there is still a marked difference of opinion. Bruns has found contracted visual fields in 33 per cent. of the cases, and he looks upon this as a typical hysterical symptom. Besides contracted fields, Sängner lays stress on the testing of central vision for nervous asthenopia, and the determining whether the contracted fields are due to fatigue, temporary or permanent, or whether they are normal at first. Wilbrand reported twenty-nine cases in all of which there was more or less visual narrowing, and his statements concerning this symptom have recently been confirmed by Pflüger, Schlosser, and Topolanski. Seeligmüller maintains that he has found the condition four times in eight cases. In America this symptom is found in but a few of the reported cases.

The question of simulation continues to occupy a prominent position in the various papers and discussions. In my opinion, simulation and malingering are possible, though quite rare. The

symptoms that can be simulated are psychic troubles, disturbances of attitude and gait, neuro-muscular asthenia, difficulty of speech, pain, and paralysis. When to these conditions are added concentric contractions of the visual fields, cardio-vascular symptoms, fibrillary twitchings, exaggerated reflexes, gastro-intestinal atony, and impairment of general health, all idea of simulation may be instantly rejected. Wernicke has very rarely met with individuals attempting simulation, and thinks that, if discovered, they should be made amenable to law. Unverricht thinks that it is very frequent, and recommends slight chloroform narcosis for its detection.

Higier ⁶⁷³_{Aug., '94} favors the idea of simulation, but is inclined to believe that, the further the history of the case is probed, the more will the doubt decrease. He more frequently encounters exaggeration which is provoked by long examinations, influence of surroundings, uncertainty as to the result of the examination, etc. He concludes (1) that to the symptoms which cannot be simulated belong the narrowing of the field of vision, Rumpf's reaction, diminution of galvanic irritability, Mannkopf's symptom, etc.; (2) that the requirements of life-insurance and the examination by many physicians favor the development of simulation; (3) that examination by a specialist alone should be considered decisive.

Philip Coombs Knapp, of Boston, ²⁰²⁵_{'93} presented his views on simulation in an exceedingly instructive contribution to the American Neurological Association. Among fifty cases of this kind, which he subjected to careful and frequent examinations, he found only two in which simulation seemed at all probable, and in neither of these was deliberate conscious simulation proven. He confirms the vast importance of the objective signs already mentioned, and adds that few simulators could have intelligence enough to withstand a searching examination by a skilled neurologist. Furthermore, a man could keep his attention fixed on any subject only for a brief time, and if he must be prepared to defend his simulation of half a dozen different symptoms he would inevitably be tripped up by unexpected tests applied when his attention is diverted.

A study of the literature, however, reveals so many conflicting opinions regarding the diagnostic significance of the various

symptoms among neurologists of equal reputation that this question must still be regarded as *sub judice*.

A unique case is reported by Harvey Reed, of Mansfield, Ohio. ⁴⁵¹_{May, '94} The patient, a farmer 63 years of age, had always enjoyed good health until after a slight injury which he received in a railroad accident. Reed saw the patient a few months later, and, besides the usual subjective symptoms of which he complained, it was discovered that his toe- and finger- nails, together with his hair and beard, had all died at the time of the accident, and were being replaced by a new growth. The line of demarkation between the dead and living nails (illustrated on pages D-6 and D-7) was so regular and distinct on each toe and finger, and the distance the new nail had grown compared so favorably with the time that had expired since the accident, that no other conclusion was arrived at but that this disturbance of the nutrition of the hair and nails occurred at the time of the accident, and was the direct result of the terrible fright caused by the wreck.

From a study of this case the following conclusions are drawn :—

1. That it is possible to have a fright of sufficient gravity to arrest the functions of the nerves long enough to cause the death not only of the hair, but also of its larger and stronger relatives, the nails.

2. That a profound shock producing such marked results cannot but affect the entire nervous system, and, as a consequence, as is demonstrated by this case, produce a well-marked case of marasmus.

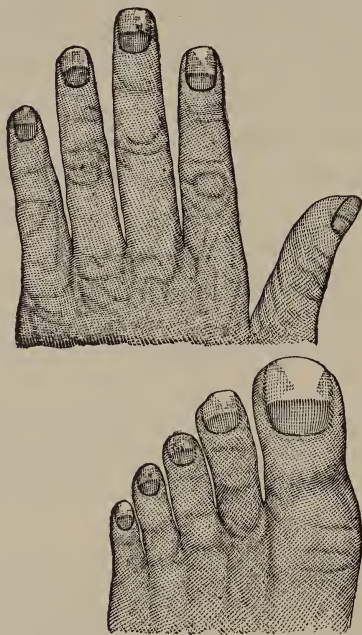
3. That this is another clinical demonstration favoring the theory that we cannot have a permanent lesion of the nervous system without a corresponding physical manifestation.

Etiology and Pathology.—With the exception of a communication by Philip Coombs Knapp, of Boston, on “Traumatic Sclerosis,” ⁹⁹_{July 12, '94} nothing of marked importance has appeared since the last report.

Wernicke ²⁹⁷_{B. 62, p. 488, '93} considers the name of “traumatic neurosis” well chosen and at present indispensable, the division into traumatic neurasthenia and hysteria being unsatisfactory. He does not agree that the traumatic neuroses consist in an hysteria called forth by injury. Hoffman almost alone maintains that these neuroses

form a single clinical unity. To Schultze the name "traumatic neurosis" introduces confusion, where the terms "traumatic hysteria," etc., cover the ground.

L. Bruns, of Hanover, ¹³_{B. 238, p. 73, '93} reviewing the more recent works, speaks as follows: "Even after slight trauma general slight neuroses not infrequently occur. These so-called traumatic neuroses are not affections of a peculiar kind, but can all be classified under



APPEARANCE OF THE LEFT HAND AND FOOT IN A CASE OF TRAUMATIC NEUROSIS, SHOWING DISTINCTLY THE LINE OF DEMARKATION BETWEEN THE DEAD AND LIVING TISSUES OF THE NAILS. (REED.)

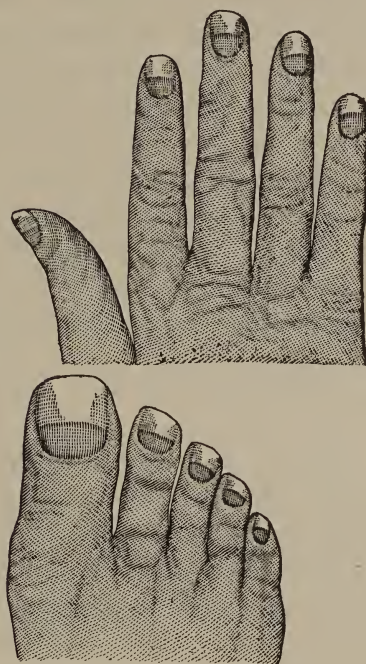
International Medical Magazine.

the names of the other neuroses. The most important are hysteria, neurasthenia, hypochondriasis, and the mixed forms. An open, not proved, verdict is always to be preferred to an unjustified positive verdict."

In England the majority of writers agree that most of the symptoms are of an hysterical or neurasthenic nature; but all forms are not to be classified under this group, as organic cases may occur.

J. O. Brookhouse, of Nottingham, from an experience extending over a period of twenty years, and from five hundred cases,

arrives at the following conclusions: (1) that, on anatomical grounds, spinal-cord concussion is a rare accident; (2) taking the aggregate of railway accidents, it was of very exceptional occurrence; (3) in connection with railway injuries the subjective symptoms are, for the most part, unreliable, and that, even when objective signs are manifested, they demanded special observation



APPEARANCE OF THE RIGHT HAND AND FOOT IN A CASE OF TRAUMATIC NEUROSIS, SHOWING DISTINCTLY THE LINE OF DEMARKATION BETWEEN THE DEAD AND LIVING TISSUES OF THE NAILS. (REED.)

International Medical Magazine.

and investigation before admission; (4) that recovery is the rule in the large proportion of cases.

A great deal of discussion and debate is still taking place concerning the exact pathology of the trouble. Two different views are held: (1) that the symptoms are the result of concussion and of anæmia of the cord, or of subsequent organic disease in the spinal cord (spinal meningitis and meningo-myelitis), the result of such concussion; (2) that the symptoms are the result of a functional disturbance in the nervous system, and indicative of traumatic neurosis. From the evidence accumulating it would

seem that the former view is the most acceptable. However, the existence of a preponderating stratum of hysteria or a psychosis must be acknowledged; and, until the pathological foundation of that state is ascertained, there will necessarily be much of the problematical in the discussions as to the so-called railway spine.

G. Bikeles ⁶⁸_{Aug., '94} reports some interesting experiments performed on guinea-pigs. A percussion hammer was used to inflict blows on the cranium, causing motor unsteadiness and spasms, but no active epileptoid attacks. At the autopsy no hæmorrhages were found in the central nervous system, and meningeal hæmorrhage in only one case. There was present, however, distinct degeneration of the medullary fibres, apparently diffuse; but in the different animals the fibres were affected in a special manner, which appeared to be influenced by the direction of the blow. In all, the changes were not restricted to the seat of the blow. The spinal cord showed common changes, especially marked in the posterior columns in the dorsal and cervical regions, less marked in the lumbar cord. These findings seem to show that trauma is capable of producing not only a swelling, but also a degeneration, of the axis-cylinders. The process may therefore be regarded as a traumatic degenerative neuritis. Bikeles concludes his very interesting paper by recalling the views of Obersteiner, Leyden, and Schmauss, who hold that the softening of the cord following traumatism is the direct result of the death of the nerve-substance produced by the blow, and is not due to preceding hæmorrhage. More recent observations are to the effect that certain symptoms disappear after a shorter or longer period, which might well depend solely upon a diffuse involvement of the nerve-fibres of the nature described above. These cases must be designated under the title of "traumatic (degenerative) spinal-cord concussion," the resulting improvement being due to regeneration. The symptomatology may resemble that of a functional disease (traumatic neurosis), with, perhaps, certain symptoms more severe, some of the fibres having been much more injured than others. Even if the symptoms after a severe spinal-cord concussion cannot be differentiated from those of hysteria, care must be taken to regard the trauma only as the provoking agent, as the Charcot school does. A lesion that is able to produce such pronounced and diffuse changes in the connecting fibres of the cord, even at quite a remote distance from

the point of injury, may well, in less severe cases, produce an impairment of their functional activity. It is possible, then, that a localized trauma may produce diffuse changes in the entire central nervous system which often may escape notice, and upon which is laid at least a part of the anatomical foundation for many so-called "functional" traumatic neuroses.

Philip Coombs Knapp ⁹⁹_{July 12, '94} also believes that the trouble may be referred to molecular changes in the finer nerve-elements. After giving a *résumé* and criticism of Watson's experiments, he quotes the conclusions of Schmauss, and reports, in detail, the histories of two cases. He concludes as follows: "There are cases where the symptoms are in large part, if not entirely, due to disturbances of the spinal cord, and where the cerebral and psychical factors may be eliminated. Changes occur in the cord from injury where there is no fracture nor dislocation of the vertebræ, no crushing of the cord, no spinal hæmorrhage, and where the vertebral canal is intact. Such changes, furthermore, may be of gradual onset, and symptoms may not develop for some time after the injury."

Prognosis and Treatment.—There seems to be less disagreement among writers as to the prognosis, and a more encouraging view as to recovery, than formerly. In almost all severe cases, in which the patient is claiming compensation, the symptoms persist and become worse rather than better, so long as he is compelled to suffer the anxiety and worry attending litigation. After the case is settled some patients recover quickly, others slowly.

In the majority of cases recovery ultimately takes place. In old, weakly, and debilitated subjects the former nerve-tone may never be regained, and, in many cases, invalidism remains permanent. Brookhouse reports recovery in the large majority of cases. Vibert and Erichson consider the prognosis as grave. Judd, Davidson, and Price are more hopeful. Oppenheim takes the darkest possible view.

It is difficult to explain the discrepancy in the percentage of cures as reported by German and American authorities. Here in America we consider the prognosis fair, especially if the question of litigation is settled at an early stage. In most cases, where only symptoms of nervous disturbance are present, no matter how severe these are nor how helpless the patient may apparently be,

the physician is justified in anticipating a more or less complete return to health in the course of time.

Nothing new has been suggested regarding the treatment of these cases. It is only by analysis of the symptoms and by the careful application of therapeutic measures especially indicated in each particular individual that success can be assured.

Medico-Legal Bearing.—The former view regarding the frequency of malingering is no longer tenable, and it seems to be now the opinion of the majority of neurologists that true, unmixed simulation is very rare, while exaggeration is quite frequent.

MENTAL DISEASES.

By GEORGE H. ROHÉ, M.D.,

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GENERAL QUESTIONS IN PSYCHIATRY.

J. Batty Tuke, of Edinburgh, ³⁶_{Feb. to June, '94} in the Morrison lectures on "Insanity," gives a summary of the most recent views on the origin, pathology, and treatment of mental aberration. He describes the results of the anatomical studies of Meynert, Golgi, and especially of Ramón y Cajal, the physiological researches of Hodge and Mosso, and the pathological findings of Bevan Lewis and Miles. The earlier symptoms of insanity are ascribed to overexertion of the brain. To speak of "mental disease" is incorrect, as insanity is a symptom of somatic disease of the brain, and not a disease of a supposed entity called mind. Recent investigations show that it may be affirmed that the psychical functions are inseparably associated with the presence of the pyramidal or psychical cells. In a majority of the brains of those dying insane, macroscopical examination shows a milky opacity of the arachno-pia, closely associated with underlying morbid processes in a space which can be covered by the two hands placed together, the lower ends of the hypothenar eminences covering the spot where the fissures of Rolando meet. The giant pyramids are the first to show markedly-altered structure, and it is difficult to refuse to accept the inference that they are the structures implicated.

As to the causes of insanity, Tuke ignores the evidence on record of the etiological relations of certain visceral diseases. Peripheral irritation, in his opinion, may be omitted from the list of causes, and, with the exception of syphilis, cachexiæ and diatheses such as gout and rheumatism may also be excluded.

The principles of treatment are rest, nutrition, and nerve-tonics. Sleep should be produced by physiological means rather than by hypnotics. Antipyrin in doses of 1 gramme (15½ grains) every two hours is recommended to produce sleep. The author says he has frequently given from 4 to 7 grammes (1 to 1¼

drachms) of antipyrin per day, for a fortnight at a time, without any ill effects. This seems rather risky medication, and, at least, more dangerous than opium and chloral, which he condemns.

G. Fielding Blandford, ²²_{Aug. 8, '94} in discussing the prevention of insanity, made some wise suggestions. The marriage of insane or neurotic persons should be discouraged, although no legal restrictions are suggested. Children of neurotic ancestry should be brought up more carefully than at present, and should be better guarded against mental and physical stress. Total abstinence from intoxicants is urged, especially in girls and boys with a strong hereditary taint. In the selection of an occupation, also, more care should be exercised.

Richard Dewey, of Chicago, ⁸⁶⁶_{June, '94} has collected information of the early-life influences in the sane and insane. The following table gives the relative ratio of these influences in two hundred each of sane and insane persons. The results do not justify any definite deductions, but can be regarded as, at best, an attempt to solve certain problems of vast importance. If we could know with certainty what influences in early life favored the occurrence of insanity, the first step toward rational preventive measures would have been taken:—

TABLE SHOWING RELATIVE RATIO OF VARIOUS EARLY-LIFE INFLUENCES IN TWO HUNDRED EACH SANE AND INSANE PERSONS.

	Sane.	Insane.
Parentage, native,	60.	53.5
Parentage, foreign,	32.	39.5
Parentage, unknown,	8.	7.
Parents not using alcohol in excess,	72.	57.5
Parents not using tobacco,	63.	45.5
Both parents used tobacco,	0.	5.
Both parents used tobacco to excess,	0.	1.5
Father used tobacco to excess,	12.	8.5
Both parents lived till child was 15 or over,	85.5	74.5
One parent died before child was 15,	11.5	20.
Non-consumptive parents,	89.	74.
One parent had consumption,	10.5	15.5
Scrofula in parents,	4.	9.
Epilepsy in parents,	1.5	1.
Apoplexy in parents,	6.5	4.
Paralysis in parents,	8.	9.5
Insanity in parents,	1.5	8.5
Parents lived happily together,	86.5	75.
Parents lived unhappily together,	10.5	13.5
Parents overindulgent,	13.5	16.
Parents not overindulgent,	74.	54.

	Sane.	Insane.
Parents too strict,	9.	10.
Parents used corporal punishment,	42.5	41.5
Parents did not use corporal punishment,	53.5	44.5
Children grew up in neglect and poverty,	3.5	6.5
Children grew up in wealth and luxury,	8.	3.5
Children grew up in malarial region,	22.5	26.5
Too hard study,	11.5	6.
Too little schooling,	16.5	19.
Did not use tobacco while children,	81.	66.5
Used tobacco before 15,	16.5	34.5
Used tobacco between 18 and 21 (males),	8.	18.
Used tobacco (females),	0.	6.
Did not use liquor while children,	80.	78.
Used liquor before 20,	10.5	10.5
Did not use tea and coffee while young,	30.	12.
Used tea and coffee from infancy,	8.5	23.5
Used tea and coffee while children,	48.	54.
Did not practice masturbation,	60.	39.
Reported as practicing masturbation,	14.5	14.5
Habits as to masturbation unknown,	25.	45.
Sexual indulgence before 18,	12.	6.
Disposition natural,	38.5	17.
Disposition queer,	4.	16.5
Disposition nervous,	24.5	35.5
Disposition quick-tempered,	29.	36.5
Disposition slow or dull,	4.5	7.
Change or disturbance at puberty,	3.5	14.
No change or disturbance at puberty,	69.	45.
No serious diseases in early life,	86.5	64.

The question of the actual or apparent increase of insanity has been much discussed during the year. W. J. Corbet, an ex-member of the British Parliament furnishes figures ²⁷⁸_{Oct., '93} going to show that insanity is increasing in the United Kingdom. D. Hack Tuke, in a very carefully prepared statistical paper, ¹⁶⁶_{Apr., '94} arrives at the same conclusion, while F. B. Sanborn, of Boston, Mass., ¹⁶⁶_{Apr., '94} furnishes evidence that the increase in the number of insane persons in Massachusetts is out of proportion to the increase in population. Attempts are made by some to account for the increase in numbers of the recognized insane by the earlier recognition of insanity and removal of the insane to asylums, the transfers of lunatics from jails and almshouses to asylums, and the lower death-rate in the latter. However the increase is accounted for, there can be no doubt that the number of cases of insanity brought to public notice is actually increasing, because figures absolutely prove it.

Edward Cowles, of Somerville, ²⁷⁸_{July, '94} reviews, in an address before the American Medico-Psychological Association, the progress

in the care and treatment of the insane during the half-century's existence of the Association. He shows that, on the whole, much progress has been made; that the alienists have always been in the front in pathological and therapeutic advancement; and that the supposition, sometimes advanced, that the alienist stood apart and aloof from the physician in active practice is not true. Weir Mitchell, of Philadelphia, ²⁴²_{July, '94} treats the question in a different spirit; his discourse, however, sarcastic but eloquent withal, is evidently not based upon experience gained in any State or well-managed private hospital.

Stephen Smith, of New York, ²⁷⁸_{Jan., '94} proposes to abolish all legal definitions of insanity and all lunacy laws, substituting for them new definitions and laws based upon medical opinions of insanity. The insane should be regarded simply as sick persons; they should be removed to hospitals, or detained there in the same manner as cases of infectious disease are taken in charge and isolated by the health authorities. An elaborate system of hospital care should take the place of the present methods. The scheme appears to be hardly practicable.

Carlos F. MacDonald, of New York, ¹_{May 5, '94} gives an elaborate account of the practical working of the new laws governing the care of the insane in New York, known as the "State Care Act." As the real meaning of State care may not be clear to all, the leading features of this law are summarized as follows:—

The abolition of the unscientific and inhuman *legal* distinction between acute and chronic insanity; the division of the State by counties into hospital districts, compelling the hospitals to receive and care for all the dependent insane, both acute and chronic, within their respective districts; the Commission in Lunacy to cause the removal of the insane poor from the county houses to State hospitals as fast as accommodations can be provided therefor; the erection of comparatively inexpensive buildings of sufficient capacity on the grounds of existing State hospitals, the cost of erection, equipment, and furnishing of said buildings not to exceed the sum of \$550 per capita, upon plans to be approved by the State Commission in Lunacy; all county superintendents of the poor, or town, county, or city authorities, before sending a patient to an asylum, to see that he is in a state of bodily cleanliness and is comfortably clad, in accordance with regulations to be

prescribed by the president of the commission; in the case of transfer of a female patient, she to be accompanied by a female attendant, unless transferred by her husband, father, brother, or son; and after said patient or patients have been delivered to the managers or trustees of the State hospitals, the care and custody of the county authorities over said insane persons shall cease, the expense of such transfer to be paid by the State; after sufficient accommodations shall have been provided in State institutions for all the pauper and indigent insane of all the counties of the State, the expense of such care, maintenance, treatment, and clothing of indigent insane patients in State hospitals to be no longer a charge upon any county after the 1st of October next ensuing, but the cost of the same to be paid out of the funds provided by the State for the support of the insane; after the board created by the State Care Act for the purpose of districting the State shall have certified to the Secretary of State that sufficient accommodations have been provided in State institutions for the indigent insane, no insane person be permitted to remain under county care, and all insane who are now or may hereafter become a public charge be transferred to a State hospital without unnecessary delay, there to be regarded and known as the wards of the State and to be wholly supported by the State; the State Commission in Lunacy, whenever it shall deem it necessary and expedient, by reason of overcrowding or in order to prevent the same, to recommend, in its annual report to the Legislature, the erection of such additional buildings on the grounds of any or all State hospitals then existing as shall, in the judgment of the commission, provide sufficient accommodations for the immediate and prospective wants of the insane of the State; or, if said commission shall deem it more expedient, to recommend the establishment of another State hospital or hospitals in such part of the State as, in its judgment, will best meet the requirements of the dependent insane; the State Commission in Lunacy to hereafter furnish the Comptroller, on or before the 15th of September in each year, an estimate as to the probable number of persons who will become inmates of the respective State hospitals during the year beginning on the 1st of October next ensuing; on the basis of these estimates the Comptroller to report, in his next annual report to the Legislature, his estimate of the amount to be provided by the State for the

support of such insane patients, and for the erection and equipment of such buildings as may be recommended.

The counties of New York, Kings, and Monroe are exempted from the operations of the State Care Act, but provision is made that whenever these counties, or any one of them, shall desire to be included under its provisions, application may be made in writing to the Governor by the local authorities to transfer their asylums to the State upon such terms and conditions as may be specified in their application. After suitable inquiry the Governor may transmit the application, with expert opinions upon the value of the property, etc., to the Legislature for action.

The act also revokes all previous exemptions to counties to care for their insane and prohibits further exemptions; it also provides that no insane person now or hereafter under the care of any State hospital shall be returned to or committed to the care of any superintendent of the poor of any county, and the said superintendents of the poor are forbidden to receive any such patient who may be returned or committed to them in violation of the act.

Although this law has been in operation only a short time, the author claims many reforms as due to it. There is evidence, however, that not a little friction has resulted from the antagonisms between the hospital trustees and the Commission in Lunacy. The latter, it is claimed, have, in some cases, exerted their authority in a brusque and inconsiderate manner. In this connection the paper of T. S. Clouston, of Edinburgh, ²⁷⁸_{Oct., '93} describing the present status of the lunacy administration of Scotland, is of interest. In his opinion the Scotch system has very few shortcomings, the poor insane in Scotland being now provided for suitably, but not at all uniformly, either in public institutions or in private houses, living a domestic life with the inmates, and the varied symptoms of the different forms of insanity have so been taken into account that the insane are classified into three great groups, for each of which a different kind of provision is made. There is, first, the asylum group, comprising the acute and curable cases, with those who are dangerous, restless, and difficult to manage, or who require much medical treatment. This group is subdivided into two classes,—the recent and the curable class, for whom special "hospital blocks" are being provided, and the more chronic class, who are retained in the ordinary wards. The second,

or poorhouse group, consists of chronic, quiet cases, who are placed in special wards of poorhouses, where all-sufficient accommodation is provided for them on a cheaper basis than in asylums. The third group, which may be called the boarded-out group, consists of chronic and harmless weak-minded patients, who are boarded with private families in cottages throughout many of the country districts. The figures given by Clouston show that at the present time there are 8871 patients, or 70 per cent., in the asylum group; 875, or 7 per cent., in the poorhouse group; and 2560, or 20 per cent., in the boarded-out group. If the two latter classes had been placed in asylums the cost of buildings would have been something like £700,000. Only 163 patients, or $1\frac{1}{2}$ per cent., are now in private asylums.

Henry P. Stearns, of Hartford, ²⁷⁸_{July, '94} does not think lunacy commissions, as at present existing in the United States, of much practical benefit to the insane. He looks for improvement in the future, however, when civil service shall be independent of politics, and tenure of office permanent. When the millennium arrives, perhaps there will be no insane, and no need of asylum-officers or lunacy commissions to vex them.

C. B. Burr, of Flint, Mich., ²⁷⁸_{Oct., '93} answers the question, "What improvements have been wrought in the care of the insane by means of training-schools for attendants?" as follows: 1. Increasing the adaptability and resources of the attendant. 2. Disseminating correct information regarding the nature and treatment of mental disease. 3. Emphasizing the importance of general nursing in the management of the insane. 4. Lengthening the term of service of attendants, thus getting a better class. The same author has written an excellent manual for the use of attendants in training-schools. ²⁰³⁹_{'94}

Orpheus Everts, of Cincinnati, ¹⁹_{Oct. 23, '93} discusses vigorously certain problems of public interest concerning the insane. These problems are the questions of dependency, of curability, and of preventability. The author argues for intelligent public supervision, care, and treatment of the indigent insane. He is somewhat skeptical regarding the curability of insanity, and extremely pessimistic as to its preventability. His reasons, however, are logical. He says: "Insanity is not only not preventable, but increasing, and certain to increase with the progress of civilization,

that, by its arts and charities, stays the relentless and remorseless hand of nature from weeding her garden of humanity of the defective, superfluous, and unprovided for."

E. A. Christian, of Pontiac, ²³⁴_{May, '94} makes some judicious remarks on the statistics of recovery of insane patients. Taking the records of the Eastern Michigan Asylum for ten years, of 2176 persons admitted, 378, or 17.3 per cent., recovered without relapse; 91, or 4.1 per cent., recovered, relapsing one or more times; 256, or 11.1 per cent., were discharged improved, remaining at home without again resorting to the asylum; and 522, or 23.9 per cent., died. The low absolute-recovery rate is due to the fact that all sorts of cases in various stages of chronic insanity are admitted.

Emil Hougberg, of Helsingfors, ²⁷⁸_{Jan., '94} gives an account of the care of the insane in Finland. During 1891 the total number in public asylums was 891. The total number of lunatics in the country was 6430, in a population of 2,412,135, or 1 in 375. These figures show that Finland is far behind other countries in public care of the insane.

R. M. Phelps, of Rochester, Minn., ¹⁰⁵_{Aug. 1, '94} asks the question "Are there degrees of insanity?" by which he apparently means degrees of mental defect as qualifying responsibility, and answers by the following propositions:—

1. Insanity means, in the medical mind, "some arbitrarily adjudged degree of mental impairment." *Legally* it means "complete" irresponsibility.
2. Insanity, whether in its broadest sense or in the ordinary medical sense, is *not* complete irresponsibility.
3. Insanity means technically mental impairment; but some mental impairments, such as delirium and intoxications, do not deserve the name of insanity, because the name still carries to most people the idea of chronic character and complete irresponsibility.
4. The mildest derangements, as hysterias, moods, eccentricities, do not deserve the name of insanity, *even in a medical sense*, because responsibility ought not to be impeached. No one is perfect, and it is not just to impeach everybody.
5. Experts and lawyers do not usually give the same definition to the word insanity, and opposing experts, usually, more or less unconsciously, adopt different standards of sanity (aside from any quibbling over technical wordings).
6. The only remedies seem (*a*) the assumption of a judicial position (to be made to say "sane" or "insane" without chance

to explain modifying facts is unjust and wrong); (b) the allowing of modified penalties by the courts to meet modified mental states; (c) the temporary adoption, by the physician, of the method of judging both the degree of sanity and of the deserving of punishment as well, and then deciding "sane" if deemed responsible enough to deserve punishment, "insane" if not. In this way the physician decides both the medical and legal elements of the question in his own mind and makes his decision on both.

Binder, of Würtemberg, ¹³³_{Nov. 28-30, '93} discusses the poetry of the insane, a large proportion of whom write in verse, the poetic quality of which, however, is usually not high. It is true, a number of great poets have been insane, but only after their best work had appeared, and insanity cannot, therefore, be considered as an evidence of their genius. The greatest poets were not insane, and excessive mental activity cannot be considered as a cause of the disease in those who lost their reason; many other factors, as dissipation, the use of stimulants, and other bad habits can be accused with more justice.

PATHOLOGY OF INSANITY, AND RELATION OF INSANITY TO OTHER DISORDERS.

A. Raggi ⁴⁷²_{Sept., Oct., '93} ²⁴²_{Aug., '94} has studied the pathological alterations in insanity. Morphological changes, especially of a degenerative character, are found in those mental diseases ascribed to psychic degeneration. Acute affections are represented by circulatory disturbances of the brain and its membranes, active or passive hyperæmia or anæmia, sometimes by appreciable histological alterations of the nervous tissues, neuroglia, and vessel-walls. In psychopathies with a degenerative base, dystrophic changes prevail. The cranium also is affected. In degenerative states, as idiocy and imbecility, microcephaly is frequent from early ossification of the sutures, though it may be also due to irregular or defective development of the brain itself, or be partial, as in the degenerated insane, where it is chiefly limited to the anterior part. The contrary condition, macrocephaly, is due either to encephalic hypertrophy or hydrocephalus. Mental affections after cerebropathies present important anatomico-pathological alterations of the greatest variety and importance. They may have their origin in the bony skull itself, as from caries or necrosis, following ear affections,

where, especially in scrofulous subjects, the inflammation of the internal ear is transmitted to the dura, with thrombosis, and often inflammation of the membranes and the brain itself. Pachymeningitis is an important factor in producing mental affections, either following traumatism or osseous affections, or internal, involving the functions of the cortex and inducing general involution or atrophy. The cerebellum rarely participates in the anatomicopathological changes of insanity, though in the progressive paralysis of the insane it is profoundly affected. In psychoses of long duration the hyperæmia and inflammation are prone to lead to the formation of osteophytes, above all in senile and puerperal insanity. The arachnoid is here rendered thicker and opaque, and often adherent to the dura; the pacchionian bodies are enlarged along the interhemispheric fissure. The pia mater is thickened and congested, and sometimes adherent to the cortex, particularly to that of the vertex and frontal lobe. In cerebral atrophy, after inflammatory, necrobiotic or simple affections, partial softening may be the base of the mental weakness. The spinal cord, peripheral nerves, ganglia, and the great sympathetic may be altered. Spinal affections are chiefly secondary, especially to cerebropathies, properly speaking. Various observers have noticed associated lesions of the peripheral nerves. Affections of other organs may either accompany or cause various psychoses. Croupous pneumonia is not infrequent, but often passes unobserved. Pulmonary gangrene may also be quite frequent, as may phthisis. Cardiac affections, generally valvular, are very often seen in necropsies; the digestive tract is altered, and sometimes may be the point of departure of depressing and hypochondriacal mental diseases, accompanied by significant anæsthetic sensorial aberrations. Catarrhal and ulcerative affections of the colon are frequent and often epidemic in asylums. Diseases of the genito-urinary tract occupy an important place in insanity. The skin, from deficient hygiene, presents important changes, among which are the osteomata of paralytics. The bones are especially fragile,—neurotic osteomalacia. The morphological changes in the skeleton correspond to alterations of the organism, which may represent anomalies of development, stigmata of a constitutional disease, deformity of accidental origin, traumatism, and physical stigmata of degeneration.

F. M. T. Skae, of Larbert, ²May 19, '94 has found vacuolation of the

nuclei of nerve-cells in 80 per cent. of cases of mania, melancholia, dementia; paralytic, alcoholic, and senile insanities; and in general paralysis. It was most frequent in the second and third layers of the cortical cells. The author believes the lesion to be due to "a disproportion between the blood-supply and the activity of the vital processes going on in the cells; from increased action in the latter and interference with the circulation; or probably from either of these causes alone, if extreme."

The relation of infectious processes to mental disease is discussed by C. K. Mills, ¹_{June 23, '04} who refers to the discussion before the Congress of French Alienists in 1893 (see ANNUAL for 1894, ii, D-1), and concludes as follows: 1. That specific infection must be included among the causes of mental symptoms and diseases which precede, accompany, or follow febrile and other infectious disorders. 2. That much negative evidence may be adduced in favor of acute delirium or acute mania being due to toxæmia. 3. That analogies with nervous affections, known or believed to be of microbic origin, favor the view that insanities with similar or related phenomena and lesions are also microbic in origin. 4. That the meagre evidence afforded by careful bacteriological investigation of cases of acute insanity seem to show that various micro-organisms may induce the same or similar types of mental disease. 5. That the mental disorders of pregnancy and the puerperal state are, in a considerable proportion of cases, probably toxæmic, without reference primarily to childbirth; but it cannot be regarded as proved that a bacillus of either eclampsia or puerperal mania is the sole cause of these affections.

J. A. Houston, of Northampton, Mass., ⁹⁹_{Jan. 18, '04} reports the results of the examination of the blood in fifty-two patients. In mania the corpuscles and hæmoglobin were normal or in excess in nearly all cases. In melancholia the hæmoglobin was deficient in all examined, and the corpuscles below normal in 50 per cent. In paresis and dementia, corpuscles and hæmoglobin were deficient. In paranoia the corpuscles were much above the normal, while the hæmoglobin was only slightly below. Forster ⁸⁶⁶_{June, '04} has studied the blood, in one hundred and twenty-eight insane patients, with reference to the proportion of hæmoglobin and its specific gravity. His conclusions are as follow: 1. Psychological excitement, with active, persistent motor unrest, causes a decrease in specific gravity and

percentage of hæmoglobin. 2. If in the course of psychosis—in melancholics or the apathetically demented—signs of venous stasis appear, the specific gravity and hæmoglobin increase. Such patients, even if anæmic, may have normal or even increased blood values. 3. If in the course of an exalted or depressed state the specific gravity and hæmoglobin percentage decrease, they will increase with the body-weight during convalescence. 4. After epileptic and paralytic attacks, an increase of specific gravity and hæmoglobin is occasionally found. 5. Epileptics who have taken bromides for years show a higher specific gravity and hæmoglobin percentage than those epileptics who have taken bromides only for a short time or not at all.

Th. Ziehen, of Jena, ⁴¹_{Aug. 23, '94} has made observations on the daily oscillations of temperature in functional psychoses. In passive melancholia the temperature is generally diminished. The evening rise is not very pronounced. The same is true of agitated melancholia. In mania there is a rise of 0.3° to 0.5° C. (4.5° to 9° F.) during the height of the disease. In paranoia the temperature curve is normal. In stupor it is below normal. Hysterical psychoses show irregular oscillations. In general paresis and dementia the temperature is sometimes much below normal. J. B. Bouchaud ⁹⁴_{Aug., '94} regards the lowered temperature in the insane as a state of diffused inhibition, caused by depression in subjects whose nervous system is profoundly debilitated.

C. Rossi ^{501 866}_{'99; Mar., '94} has studied the alterations of respiration in the insane, and has arrived at the following conclusions: 1. In mental diseases independent of any other factor, and solely through the altered function of the psychical sphere, varied alterations of the respiratory movements occur. 2. These alterations are not to be referred to any one nosological form, nor to any criterion of classification that is not symptomatic,—that is to say, not referable to the two fundamental symptoms of exaltation or depression,—and are summed up in a hyper- and hypo- activity of the respiratory function, according as one or the other of the symptoms prevails. 3. In the depressive form, when, with the diminished psychical activity, there are associated serious disturbances in the sensory sphere, the respiratory trace presents particular characters that may be referred to the feeling of anxiety, and that in the typical form of anxious lypemania may attain a very high degree of

severity. 4. With the easy amotivity that so often accompanies depressive psychical conditions, there is seen a true emotional tremor of the respiratory muscles, quite distinguishable from other tremors. 5. In paralytics, besides the alterations due to the altered psychical function, the respiratory tracing shows, in almost every case, at the beginning of the disorder, a characteristic tremor, the diagnostic value of which is not yet determined.

Gadziacki⁴¹_{Aug. 23, '94} examined the urine in sixty-eight cases of insanity, and found albumin in 32 per cent. Sugar was found in a small proportion (0.5 per cent.) in one case. Albumin was usually found in cases of general nutritive disturbance (general paralysis, dementia), of great excitement or motor disturbance (epilepsy). In melancholia, mania, and hallucinatory insanity it was rarely present.

L. Cronstel²⁰³¹_{'93}; ⁹⁹⁶_{Apr. 10, '94} finds that 2 per cent. of all insane persons have lost the color-sense. The sense for violet is lost in about 10 per cent. of the cases, being almost exclusively limited to various forms of dementia (general paresis, senile dementia, organic dementia). This loss of color-sense is generally accompanied by a diminution of acuteness of vision and the sense of light.

Christiani²⁷⁸_{July, '94} concludes a study of the tremor of insanity with the following general statements: In the most varied forms of mental disorder, in the simple idiopathic types, we very frequently observe tremor independent of all other factors, and due solely to the altered function of the psychical sphere. It is an intention tremor, appearing in voluntary movements and ceasing during repose. It cannot be referred to any single nosological form of mental alienation, but only to the two fundamental symptoms of exaltation and depression that may be met with in every form of psychosis. In cases of exaltation the tremor is vibratory, the vibrations being more frequent, quicker, less rhythmic, and equal. In cases of depression it is undulatory; the oscillations are fewer, slower, not so high, more equal, and more monotonous in rhythm. There is, therefore, a correspondence between the two fundamental symptoms of exaltation and depression met with in the different forms of mental alienation and the motor phenomena of tremor, which evidence a hyper- or hypo- activity, according as one or the other of these two elements prevails. The pathogenic mechanism and semiotic significance may be summed up in the

functional dissolution of the cortical nervous centres, and in the weakness, inco-ordination, and scattering of the psychomotor force.

C. Strecker¹³_{Sept. 15, '94} has examined the post-mortem records of the Dalldorf Asylum in Berlin and found heart-lesions present in males in 61.67 per cent. and in females in 42.75 per cent. In the sane, according to the records of the Erlangen Pathological Institute, the proportion of heart-lesions is 27 per cent. for males and 23.2 per cent. for females. Valvular lesions are most frequent. G. Reinhold, of Freiburg, has analyzed the admissions to the Freiburg psychiatric clinic with a view to determining the relations of heart affections to insanity. After an examination of the literature, in which special attention is given to Greenlees's paper,¹⁶⁶_{'85} the cases are tabulated. There were 37 valvular lesions in 644 cases examined,—a proportion of 5.74 per cent.; 461 cases, or 71.58 per cent., presented some functional heart disturbance. Structural defects were most frequent in melancholia and mania, while functional troubles prevailed in alcoholism and melancholia.

M. Friedmann, of Mannheim,¹³_{Apr., '94} reports two cases of primordial menstrual insanity, and concludes that there is a variety of periodical insanity beginning with puberty, coincident with disturbances of menstruation and ending when that function is regulated. It is to be differentiated from the usual forms of periodical menstrual insanity, and may be termed menstrual developmental insanity. Eliot Gorton, of Morris Plains, N. J.,⁵⁹_{Aug. 25, '94} reports a case of insanity with decided exacerbations at the menstrual periods. The uterine appendages, which were apparently normal, were removed, with the result of producing a complete cure of the patient. The author expresses the opinion that, in all cases where the menstrual epoch acts as the exciting cause of insanity, the ovaries should be removed, even if there is no evidence of local disease.

W. Gill Wylie, of New York,⁵⁹_{Aug. 4, '94} reports three cases of well-marked melancholia apparently dependent upon local pelvic disease. These cases recovered, physically and mentally, after appropriate local treatment. One of the cases had been insane four years, and had been nine months in an insane hospital. C. C. Fowler, of Los Angeles,¹¹²_{Apr., '94} discusses the relation of pelvic disease and psychical disturbances in women, and concludes that the pelvic disease should be treated before remote symptoms

manifest themselves. He quotes Robert Battey as saying: "You are aware that the great weight of opinion in Europe is entirely opposed to the claims of my operation in psychological and nervous cases, and in this country the profession is at present tending in the same direction. I believe the medical world is wrong upon this point, and I feel perfectly assured that time will demonstrate it. I am patiently waiting for disrevulsion." The present writer thinks the signs of disrevulsion are already plainly to be seen. When philosophical alienists like Spitzka, Alice Bennett, and Burr recognize the relation between pelvic disease and insanity, those who take their cue from the leaders will follow. Correct clinical observation must soon displace sclerosed opinions based on nothing in particular.

Davezac, of Bordeaux, reports ¹⁸⁸_{Oct. 15, '03} a case of post-operative insanity following ovariectomy performed for the removal of several small ovarian cysts. The patient recovered from the operation, "*malgré quelques accidents péritonéaux*," which probably means intervening sepsis or peritonitis, and on the fifteenth day was attacked by acute melancholia lasting seventeen days. Several weeks later pulmonary tuberculosis developed, leading to death. There were no neurotic antecedents. E. Régis, of Bordeaux, ²⁷⁸_{Jan., '04} reports an interesting case of insanity following removal of the uterine appendages, the form being hallucinatory and delusional, with verbal obsessions. After six months, injections of ovarian extract were made daily, which seemed to produce decided improvement in the course of two months.

Rohé ¹_{Oct. 14, '03} has carefully studied the reported cases of insanity following operations upon the female sexual organs, and comes to the conclusion that these may in general be classed among the toxic, septic, and climacteric insanities, with a small proportion due to shock. Insanity is not more frequent after operations upon the pelvic viscera than after general operations.

S. Venturi ⁵⁸⁹_{Apr. 24, '04} describes twelve cases of gonorrhœal hebephrenia. The patients were mostly males between 18 and 25 years of age, and all of them had a florid gonorrhœa which had existed several weeks or months before the outbreak of the psychosis. The cases had no hereditary taint, and all but one recovered within six months. The exception ended in dementia. The symptoms were: stupor, apathy, terrifying hallucinations, intercur-

rent delusions with suicidal attempts, refusal of food, insomnia, and general hyperæsthesia with increased reflexes. The author attributes the cause of the mental symptoms to a gonococcal invasion of the meninges, analogous to the gonorrhœal inflammations of the synovial membranes, the pleura, and the pericardium. Balsam copaiba is considered a useful remedy in this condition.

W. F. Menzies, of Liverpool, ²⁷⁸_{Oct., '93} has analyzed 140 cases of puerperal insanity. Of these 30 occurred before labor, 64 in childbed, and 46 during the lactational period. Among the puerperal cases proper, delirious excitement was present in 46 per cent., and the recovery-rate was 75 per cent. Menzies leans to the opinion that puerperal insanity is due to a toxæmia, although he appears to be unaware that this is a view at present largely accepted. L. Hoche, of Hemelingen, and H. Hoppe, of Allenberg, ⁴¹_{Aug. 23, '94} have also studied series of cases of puerperal insanity without arriving at any novel conclusions. Hoppe gives an excellent account of acute hallucinatory confusion as one of the frequent clinical forms of puerperal insanity.

E. Goodall and M. Craig, of Wakefield, ¹⁶⁶_{Apr., '94} have analyzed twenty-two cases of climacteric insanity admitted during the last ten years to Bethlem and the West Riding Asylum. The average age at beginning was 47 years. The clinical forms of the insanity were: melancholia, 66 per cent.; mania, 17 per cent.; paranoia, 12 per cent.; weak-mindedness, 2 per cent.; general paralysis, 2 per cent. Sixty-eight per cent. had hallucinations of one or more senses; 45 per cent. were suicidal; 38 per cent. recovered; 8 per cent. died. The climacterium does not appear to have any favorable influence upon existing psychoses.

W. P. Spratling, of New York, ¹_{May 19, '94} reports fifty-seven cases of insanity occurring in six years among silk-mill employés in a city of under 100,000 inhabitants. Of these cases 70 per cent. were due to overwork; 79 per cent. were acute insanity,—acute mania, acute delirious mania, acute melancholia, and primary dementia. Although the analysis of the cases is defective, the following conclusions of the author may be accepted: "Stress—direct, continuous, and powerful—was the sole cause in a majority of these cases. It was applied in different ways: Long hours daily spent in managing complex and delicate machinery, one person sometimes doing the work of two or more in order to

increase his earnings; insufficient mental relaxation and rest; insufficient out-door exercise; the accuracy and complexity of manual motion and mental application constantly required; the vitiated atmosphere, and poor food are the prime factors in the production of so many cases of insanity among this class of people."

E. Régis, of Bordeaux, ¹⁸⁸_{Apr. 29, May 6, '94} reports an interesting case of unilateral sensory-motor hallucinations of hearing dependent upon a chronic middle-ear inflammation dating from an attack of measles. He also discusses the cases reported by other authors, and shows that these hallucinations are generally dependent, either upon peripheral local disease of the sensory organ or upon structural lesions in the centres. In the discussion of this paper Villar suggested, in the treatment of hallucinations due to aural involvement, first, appropriate local treatment of the ear disease, and, should this fail, opening of the skull in order to find the morbid condition.

W. S. Colman, of London, ²_{May 12, '94} reports a number of cases of hallucinations in the sane due to local diseases of the sensory organs. Hallucinations of vision were found in association with eye diseases, such as choroiditis, retinitis, and retinal hæmorrhage, and with lesions in the brain. Auditory hallucinations were present in labyrinthine diseases and obstruction of the external meatus. In two cases of auditory vertigo there were hallucinations of vision as well as of hearing.

An interesting case of hallucinations of hearing, sight, smell, and general sensation is reported by L. Maupaté, of Paris, ¹⁵²_{June 15, 22, '94} in a patient with senile dementia and loss of sight consequent upon double neuroretinitis, the various hallucinations coming on after he became blind.

H. Chiari ⁸¹⁴_{June 15, '94} reports a fatal case of self-inflicted injury of the intestine in a man of 50 years, who suffered from paretic dementia. He was brought to the clinic *in status epilepticus*. Epileptiform attacks occurred about every fifteen minutes. Temperature was normal. There was considerable meteorism. The convulsions involved chiefly the upper extremities and the trunk. It was noticed that in the attacks the patient continually struck the abdomen with the clenched hands, the blows from the left fist being received over the region of the transverse colon, and those

from the right over the ascending colon. The attacks continued, and two days later the temperature began to rise. On the following day there was partial return of consciousness, and the patient complained of pain in the abdomen. Tympanites had become more marked. Death occurred five days later. Autopsy showed, aside from atrophy of the frontal lobes, dilatation of the ventricles and thickening of the pia mater, an old apical tuberculosis, and an acute diffuse peritonitis. There were fibrin, pus, and gas in the peritoneal cavity. Along the anterior surface of the ascending and transverse colon were four tears, varying in length from five to fourteen centimetres. In one were found two small perforations. The others involved only the peritoneum, the longitudinal, and, slightly, the circular muscular layer. The author believes that the blows from the clenched fists during the convulsions, acting upon the already much distended intestine, occasioned the several ruptures and resulting peritonitis.

W. F. Drewry, of Petersburg, ⁸¹⁴_{July 1, '94} reports a case of chronic mania in a patient who had swallowed at different times six or seven pounds of pebbles of various sizes. Another had the habit of swallowing living insects and small animals, such as bugs, flies, bees, wasps, and mice. In another case nearly eight pounds of stone, beads, bits of coal, pieces of glass, buttons, pieces of slate, clay, etc., were removed from the rectum.

M. Christian, of Charenton, ¹⁵²_{Nov. 17, '93} reports a case of hæmorrhagic pericarditis in a dement who died suddenly. There was generalized tuberculosis of the lungs, pleura, and peritoneum, which had not been recognized before death. The case was probably a tubercular pericarditis similar to those reported by Virchow (see ANNUAL for 1894, i, B-19) and Osler. ⁵_{'94}

Brugia ⁹⁷¹_{v. 8, No. 2; Feb. 15, '94} ⁸¹⁴_{Feb. 15, '94} reports the case of a boy of eight years, in perfect health, and without hereditary taint, who was poisoned by drinking a considerable quantity of essence of bitter almonds. The intoxication was characterized by general cyanosis, deep coma, and tonic and clonic spasms. He recovered promptly from the immediate effects, but suffered subsequently from irregularly repeated convulsions, and was retarded both in physical and in mental development. His character changed, he became morally degenerated, was frequently brought into conflict with the law, and finally, on account of more frequent convulsions, was com-

mitted to the asylum at the age of twenty years. Here he was found to have hystero-epilepsy, and the seizures were marked by loss of consciousness and right-sided hemianæsthesia and hemianalgesia. The permanent symptoms were diminished sensibility, and loss of taste, smell, and hearing upon the right side, together with diminution of the right visual field. There was pronounced moral and mental weakness, with a tendency to impulsive acts.

GENERAL PARESIS.

The pathology of general paralysis continues to attract the attention of investigators. H. J. Berkley, of Baltimore,⁸⁵⁸ has studied the disease, especially as it occurs in the negro race. The results of his careful microscopical study are given below:—

“A widely-pervading cell-degeneration of a granular, probably fatty type, presenting some variations in extent and appearance, has been observed in each case. Besides the cellular changes there has been some overgrowth of the connective-tissue structures within the cerebral substance, and a diffuse inflammatory change around the sheaths of the blood-vessels, with slighter alterations in the sheaths themselves. In one case the autopsy took place probably within fifteen months from the commencement of the disorder, and arterial changes were the most prominent pathological feature shown by the microscopical examination. From these two autopsies, as well as from others upon the brains of white persons, it seems more than probable that the beginning of the disease is to be found in some alteration of the blood-supply, followed by a periarterial lymphoid growth, disturbance of the lymph-currents, consequent malnutrition of the nerve-structures, degenerative changes, and then, when the nerve-elements begin to atrophy and disorganize, an overgrowth of the spider-cells, with other fixed cell-proliferation among the degenerating tissues; then follow the serous and sanguineous apoplexies and other incidental symptoms occasionally found. Accordingly, we cannot accept either of the common views of the pathological state of dementia paralytica: (1) that it is due to a diffuse interstitial cortical encephalitis, in which the connective-tissue elements are primarily affected; nor (2) that it is a diffuse parenchymatous inflammation, which commences in the nerve-elements proper and involves secondarily the neuroglial structures.”

G. Duranté, of Paris,¹⁰⁰_{Feb. 24, Mar. 3, '94} gives an account of the visceral complications in general paresis. Pulmonary lesions of various kinds were found in 66 per cent.; heart-lesions in 82 per cent.; hepatic lesions in 53 per cent.; kidney-lesions in 65 per cent.

Von Krafft-Ebing⁵⁷_{Sept. 9, '94} discusses the great increase of general paresis, showing that from 1873 to 1892 the increase of general paresis, in the total number of insane admitted to six German and Austrian institutions, was from 21.1 per cent. in males and 5.7 per cent. in females in the former year to 26.8 per cent. in males and 9.6 per cent. in females in the latter. Syphilis has been shown to be a precedent condition in a large percentage of cases. E. Hougberg, of Helsingfors,⁵⁷_{Mar., '94} found that 7.03 per cent. of the admissions at the asylum at Lappvik were paretics. Ninety-eight were males and 9 females. None were under 25 years and only 11 were over 50 years old. Syphilis was undoubtedly present in 77 men and 4 women; it was probably present in 9 men and 3 women. No trace could be discovered in 12 men and 2 women, although there was reasonable ground for suspicion. In the non-paralytic forms of insanity there was pre-existing syphilis in only 4.24 per cent. The interval between the beginning of the syphilis and the general paresis was from five to fifteen years. Eighty-two per cent. of the patients died within four years. A. Christiani²⁴²_{Mar., '94} found syphilis as a factor in 63 per cent. of his cases. Tschige¹⁰⁰_{Aug. 26, '94} has found, among 130 cases, 96 certainly and 15 probably syphilitic. Obecke⁶⁹_{July 6, '94} found syphilis in 53 out of 100 cases of general paresis.

W. Julius Mickle has published a critical digest⁴⁷_{Spring, '94} of the recent contributions on general paresis. The work of Berkley, aforementioned, is not referred to. Among the more important researches are those of O. Binswanger,²⁰⁴⁰_{'93} A. W. Campbell,¹⁶⁶_{Apr., '94} M. Klippel's study of spinal forms of the disease,³⁶⁰_{Jan., '94} and Klippel and Azoulay's report⁹⁴_{Aug., '94} upon the results of a study of the lesions of general paresis by Golgi's method. From a study of the literature, it is evident that the opinions of the different investigators are not harmonious. Pathologists are not yet agreed whether the essential morbid condition in general paresis is inflammatory or degenerative; whether the changes occur first in the nerve-elements, the stroma, or the lymph- and blood-vascular systems. The observations of Berkley seem to point to the latter.

J. H. Lloyd, of Philadelphia, ²⁴²_{Sept., '94} reports a case of arthropathy in general paresis with section of the spinal cord. The morbid appearances in the brain were those usually found in general paresis. Two system lesions were found in the cord: (1) partial posterior sclerosis; (2) sclerosis of the crossed pyramidal tract on the right side and part of the direct pyramidal tract on the left side.

F. E. Elkins, of Edinburgh, ⁶_{June 16, '94} reports twenty-eight cases of general paresis in adult women admitted to Morningside Asylum in five years. The average age at admission was 40, the youngest being 25 and the oldest 51. The women generally belonged to an immoral and dissolute class, although the proportion who had had syphilis was not ascertained. J. D. Idanow ⁹⁹⁶_{July 10, '94} discusses this question with much detail. General paresis occurs a little more than one-third as often in women as in men. Syphilis is the most frequent single cause.

Cramer ²_{Sept. 1, '94} states that in many general paretics the ulnar reflex is absent, and he regards this as of some diagnostic value.

S. Grosso, of Naples, ²⁴²_{Aug., '94} reports upon the ocular changes and visual disturbances in 44 cases of general paresis. In 21 out of the 44 he observed a conjunctival catarrh which aggravated with the general paresis and was characterized by bluish discoloration of the conjunctiva, absence of ciliary limitation, and a pronounced resistance to therapeutic measures. As to the pupil, it was equal in diameter in 27, unequal in 13. In 25 it reacted well to light and accommodation; in 15 it reacted feebly to light and not at all to accommodation. In 1 case there was a maximal diameter of 4 millimetres and a minimal one of 1 millimetre; in 35 individuals it oscillated between 2 and 5 millimetres; in 5 it was less than 2 millimetres, the contraction usually progressing with the general disease. With atropine there was incomplete dilatation in 2 from rigidity of the tissues, in 2 partial, in 3 none; complete in 33 and unequal in 11. Nothing abnormal as to the extrinsic muscles. Vision was normal in 7 individuals in both eyes, in 5 in one eye alone; but in all it diminished with the advance of the disease. Color-perception suffered with the progression of the paralysis, the perception of violet first disappearing, then blue, and lastly red. Generally it is restricted, concentrically, for white and colors. Ophthalmoscopically, there was remarked a certain degree of papillary atrophy, pre-eminently in the last stages.

Magnan and P. Sérieux²⁰⁴¹_{'94} have written a systematic work on general paresis, marked by their usual clearness and precision. A. Robertson, of Glasgow,²¹³_{Dec., '93} reports a case of general paresis markedly improved by six issues in the scalp over the motor area, and kept discharging by an irritant ointment. The patient was discharged apparently well, but was re-admitted eight months afterward with more pronounced symptoms of general paresis. A. Marro and A. Ruata⁷⁵⁷_{June to Aug., '94} report two cases in which decided improvement was obtained from prolonged suppuration produced by injection of oil of turpentine into the outer surface of the thigh.

M. Briaud⁹⁹⁶_{Aug. 10, '94} states that in general paresis alteration of the reflexes is the rule, their non-alteration the exception. There is inequality of the pupils in four-fifths of the cases. Myosis is twice as frequent as mydriasis. The tendon reflexes are altered in 81 per cent., the ocular reflexes in 72 per cent., the pharyngeal reflex in 48 per cent., the palpebral reflex in 9 per cent., and the plantar skin reflex in 13 per cent. The reflexes are increased four times as often as they are abolished. The masseteric reflex is nearly always increased, rarely abolished. P. Sollier⁹⁹⁶_{Apr. 10, '94} found alteration in the reflexes as follows: patellar, 72 per cent.; pupillary, 79 per cent.; pharyngeal, 54 per cent.; masseteric, 12 per cent.

P. Sérieux, of Paris,⁹⁴_{May, '94} describes an unusual manifestation in general paresis, namely, a motor-verbal hallucination,—*i.e.*, a voice speaking from within, not heard through the ears. In the case in question this hallucination was closely associated with spasmodic contractions of the masticatory muscles. The relation of the case and the commentary are models of scientific writing.

J. Middlemass, of Edinburgh,¹⁶⁶_{Jan., '94} adds six cases to those previously reported (see ANNUAL for 1893 and 1894) of developmental general paralysis. The ages of the patients were 17, 18, 20, 23, 16, and 11½ years. All were females. The marked atrophy of the brain noticed post-mortem in other cases was also present in four, who died under the author's observation. Saiki, of Berlin, reports⁴¹_{June 4, '94} one case in a girl of 14; H. C. Bristowe, of Wells, England, one,—a boy aged 13; A. Moussous, of Bordeaux, a case,⁵⁷_{May 6, '94} age and sex not mentioned; Bouchaud⁹_{July 7, '94} reports two cases in brother and sister 8 and 10 years of age, with some of the symptoms resembling general paresis, but not sufficiently typical to allow of an absolute diagnosis.

ACUTE CONFUSIONAL INSANITY.

In two clinical lectures delivered at the Salpêtrière, J. Séglas³⁶⁰ May, June, '94 gives an excellent account of primary confusional insanity (*la confusion mentale primitive*).

The symptoms are both mental and bodily. Among the former must be placed bewilderment, astonishment, and hebetude, an inert and stupid expression. The patient is lost in his responses to questions and appears to be out of touch with persons and things about him. He has difficulty in finding words for his ideas and in understanding what is said to him. His thoughts are slow, and there is difficulty in fixing his attention. He is distracted by persistent dreamings. He is in a state of doubt and uncertainty, and his perception and imagination are defective. The disease is not due to disturbance in the elementary sensations, but in the psychological interpretation of these sensations. The memory is weakened. Accurate recollections may, as it were, be forced upon him, but he is unable voluntarily to recall events. The same alteration takes place in regard to voluntary movements, which are hesitating, awkward, etc. In light cases this inability of action is greatly complained of. Sometimes intervals are present when the patient recognizes the confusion in his ideas. Sometimes there are delusions of a melancholic type which are changeable and incoherent. Hallucinations may be present with sudden impulsiveness, when violence either to himself or another may be done. The docility, however, is usually striking, especially toward some persons, who may thus manage the patient easily. The physical symptoms are general weakness, exhaustion, and loss of flesh. The pupils may be unequal and a cataleptic state supervene. Insomnia is almost constant. Two forms are recognized: the asthenic and hallucinatory. Sometimes the bodily symptoms predominate, and the forms may then be classed as cachectic, typhoid, and meningeal. The onset of the disease is usually rapid. It lasts, on an average, from four to six months, and may end in recovery, chronic dementia, or death. It is the only mental disease besides general paralysis which may cause death. The prognosis is worse than in mania or melancholia. The more complicated and changing the form, the worse the prognosis. Lighter forms must be distinguished from melancholia. The physiognomy is quite different from mania. In early general paralysis there is no real confusion

of ideas, but progressive dementia. Traumatism, physical and moral shock, infectious disease, excesses, etc., are important occasional causes. Heredity is of less significance than usual. The bodily condition must be improved; alkaline bromides are to be avoided. If due to auto-intoxication, efforts at elimination should be made. Moral treatment is important. Confinement to an asylum should be delayed as long as possible.

E. Mendel, of Berlin, ⁴_{July 16, '94} gives an exceedingly clear account of hallucinatory delirium, to which most post-febrile and post-operative psychoses belong. The two most marked characteristics are the hallucinations and the delirium. There is no fever. The condition is to be differentiated from intoxication and exhaustion psychoses. It usually begins suddenly. The prognosis is favorable. The treatment is more dietetic than medicinal. Tonics are useful, and at times warm baths or wet packs will allay the restlessness. Hypnotics should be avoided.

Bernheim, of Nancy, ¹⁴_{Oct. 18, '93} reports two cases of acute delirious mania, in the course of typhoid fever, coming on suddenly in the second week and lasting two or three hours. During the continuance of the mental aberration the temperature fell to normal, to rise again after the mind cleared up. C. S. Potts, of Philadelphia, reports ⁹_{June 30, '94} a case of acute delirium following a carbuncle of the lip. On post-mortem examination all the organs of the body were found healthy. Cultures of cerebro-spinal fluid (collected with insufficient precautions) developed the pneumonia-coccus and two pyogenic organisms. A point of interest was that the temperature before death rose to over 108° F. (42.2° C.). H. M. Brown, of Milwaukee, ⁸⁸⁶_{Dec., '93} also reports a case. Nothing was found post-mortem to account for the symptoms.

T. P. Prout, of Morris Plains, N. J., ⁹_{Aug. 15, '94} describes vacuolation of the protoplasm of the nerve-cell and nucleus and pigmentary degeneration as phenomena present in cases of acute delirium. Carlo Rasori, of Bologna, ⁵⁸⁹_{Sept. 23, '93; Dec. 30, '93} ² found a bacillus in the fluid obtained from the subdural space in a fatal case. When cultivated and inoculated into rabbits, it produced death in two to six days. There was always great congestion of the cerebral meninges, with hæmorrhages on the under surface of the pia and congestion and œdema of the brain. Lavrand ²²⁰_{June 23, '94} reports a fatal case of acute delirium produced by a spiritualistic *séance*.

MELANCHOLIA.

In a clinical lecture at the Salpêtrière, Séglas gave ¹⁴_{Apr. 15, '94} an excellent description of simple melancholia, in clear, concise, and practical language. Revertegat ⁹⁹⁶_{Apr. 10, '94} has studied the hallucinations in melancholiacs and found them present in twenty-three out of sixty-two cases. Hearing, sight, and tactile sensibility were most frequently affected. They were most intense in melancholia with stupor. W. F. Farquharson, of Carlisle, ¹⁶⁶_{Jan., Apr., '94} has analyzed 730 consecutive cases of melancholia admitted to the Carlisle Asylum during twenty-seven years. Taking the three grand groups of mental diseases,—melancholia, mania, and dementia,—melancholia formed a fraction over 25 per cent.,—334 males and 396 females; 58 per cent. were discharged recovered, 8 per cent. relieved, 4 per cent. unimproved, and 20 per cent. died; 219 were cases of simple melancholia and 511 melancholia with delusions; 65 per cent. had suicidal tendencies, self-destruction being actually attempted in 33 per cent.; in 29 per cent. some physical disease co-existed with the mental disorder. The physical diseases most frequently present were phthisis (70 cases), heart disease (57 cases), and cancer (10 cases). Two-thirds of the cases were between 30 and 60 years of age. The largest proportion of recoveries occurred between 10 and 30 years. Deaths were most frequent from 50 to 80. The proportion of relapses was 22 per cent. Hereditary predisposition was ascertained in 38 per cent.

Speaking of causation, the author says: "Leaving out of consideration hereditary predisposition and previous attacks, the cause of melancholia was found, in a marked preponderance of cases, to be of a physical nature. In over 400 of the 730 cases there was ascertained to be some such cause at work in originating the mental depression. Intemperance in drink was assigned as a cause in 84 cases, pregnancy in 7, parturition and the puerperal state in 20, lactation in 23, privation and starvation in 28, and in a large number of other cases there was some kind of physical disorder preceding the melancholia. In about 250 cases the mental depression was assigned to some moral cause; even in some of these, however, there was also some physical cause at work."

The treatment consisted in abundance of nourishment; forced feeding, if necessary; attention to the bowels; tonics and stimu-

lants, and plenty of out-door life. Paraldehyde was given when an hypnotic was needed. The surroundings should be made as bright and cheerful as possible.

E. D. Bondurant, of Tuscaloosa, Ala., ⁹Mar. 10, '94 in an interesting article on katatonia, reports a number of cases, which, however, are not characteristic examples of the disease as described by Kahlbaum.

H. Dehio, of Heidelberg, ⁶⁸Aug., '94 describes a form of periodical insanity in which stupor is a manifestation of mania, and not, as it is usually, of melancholia. The excitement present showed a maniacal instead of melancholic character. The author proposes the name of "maniacal stupor" for this condition.

INDUCED INSANITY.

The subject of induced or communicated insanity (see ANNUAL for 1894, ii, D-24) has commanded the continued attention of eminent alienists. De Boeck ⁶⁸⁵Dec., '93 contributes a systematic paper upon the subject, and Marandon de Montyel ¹⁰⁰June 28, July 3, 10, 12, '94 summarizes our present knowledge in a critical article, drawing the following conclusions: 1. The cases classed together under the name *folie à deux* comprise three absolutely distinct and well-defined varieties which may be designated under the names of imposed insanity, simultaneous insanity, and communicated insanity. 2. Imposed insanity is a simple error of judgment, a belief in the reality of the delusions of a lunatic; it is not accompanied by hallucinations or other morbid mental action. 3. Simultaneous insanity is a delusion produced at the same time in two individuals by the same causes. There is here no mental contagion. 4. Communicated insanity is the only variety of *folie à deux* that is due to morbid mental contagion. It may be communicated from a lunatic to a sane person or to another lunatic. In the latter case it takes the name of induced or transformed insanity. The sole conditions for its occurrence are a psychopathic predisposition and a direct morbid impression.

PARANOIA AND ALLIED CONDITIONS.

D. Hack Tuke ⁴⁷Summer, '94 writes in an interesting manner of "Imperative Ideas." He gives a large number of cases illustrative of various forms and grades of mental disturbance in which impera-

tive ideas are characteristic. In very many cases one cannot pronounce the patients insane, for they recognize the absurdity or abnormality of their beliefs and actions. In some, however, the so-called imperative ideas are truly delusions; but even the author would hesitate to pronounce the patient insane. Referring to the form of impulsive acts described by Charcot and Magnan under the name "onomatomania," Tuke thinks these eminent authors wrong in attributing this condition always to an inherited insane taint. However, in nearly all the cases reported by Tuke himself, there was psychopathic ancestry, the majority of them being associated with epilepsy in the preceding or the same generation. The author concludes his able and interesting paper as follows: "What strikes one forcibly in regard to most, if not all, imperative ideas is that between them and ordinary ideas the difference is one of degree, and that it is a most difficult thing to determine when the boundary-line has been passed. This on the psychological side. And on the physical side, what we want, above all things, to know is what cerebral change, degeneration, or dissolution has occurred by which the man, who to-day is conscious of and smiles at an imperative idea, gravely believes it to-morrow, and labors under a systematized delusion. Granting that there are sublevels and superimposed levels in the highest centres themselves, we must, I suppose, assume that, in the case of imperative conceptions without actual insanity, no pathological changes have induced dissolution of the very highest level or area, and that this only happens later on, when the patient, with more extended dissolution, no longer distinguishes between true and false ideas. The predominating idea has, in fact, become part of his own being, and not one extraneous to himself, upon which he can look down as distinct from his personality,—his *ego*. In short, is the explanation to be found in the degree or extent of dissolution in the same range or level of the highest centres, or is it to be found in different depths of dissolution in these centres?"

J. Séglas,²¹²
Feb. 25, '94 also gives a clear account of the same class of cases under the term generally used by French authors, namely, "obsession." Legrain discusses the question⁶²
July, Aug., '94 with special reference to dipsomania, which he defines as an imperative obsession to drink with a corresponding impulsive act, coming on suddenly, during which the subject, unable to resist, suffers severe anguish.

This characterizes the form of impulsive intemperance, which differs from the ordinary forms of alcoholism.

Allan McL. Hamilton, of New York, ⁹ Jan. 20, '94 reports several cases of *folie de doute* and discusses their peculiarities in an interesting manner. He differentiates them from cases of paranoia. He believes that it is usually not necessary to commit these patients as insane. The prognosis is not altogether unfavorable. Habits of self-control must be cultivated.

Magnan ¹⁴ Nov. 29, '98 gives a clear account of systematized delusions not based upon hereditary influence. The prognosis is more favorable than in the hereditary cases. The evolution is slow, beginning, between the thirtieth and fortieth years of life, with prodromal symptoms. After two or three years delusions of persecution follow, which, in the course of ten or more years, change to delusions of grandeur, followed by dementia. Magnan therefore recognizes an acquired paranoia, which, for prognostic reasons, should be differentiated from the more usual hereditary form, which he describes with equal lucidity in a subsequent lecture. ¹⁴ Jan. 24, '94

Elizabeth C. Mallison, of Dixmont, Pa., ²⁴² Nov., '98 gives an interesting account of four generations of paranoiacs, the symptoms being well displayed in autobiographical documents placed in her possession by the last patient in the series and her mother. The symptoms in the case under observation are at present still in evolution. C. B. Burr, of Flint, Michigan, ¹⁷⁰ Nov., '98 reports a case of paranoia with delusions of change in sex, in a patient who had a fibrocystic growth of the uterus. This was removed, and considerable mental improvement followed the operation. Burr believes the delusion developed about the time the uterine fibroid began to make serious encroachment, and remarks, significantly: "While metrorrhagia had occurred previous to that time, it is probable that the tumor had not before acquired a growth sufficient to determine any marked alteration in the organic sensations proceeding from the pelvic viscera."

C. H. Hughes, of St. Louis, ⁹⁸ Oct., '98 discusses morbid erotism, under which he includes all forms of sexual perversion. He formulates his conclusions as follows: 1. Morbid erotism presents both normal and abnormal psychological aspects. It therefore presents a voluntary deviation from the ordinary and natural indulgence of the genesic instinct—the normal but immoral psy-

chology of the eroto-sexual propensity—and instinctive, inherent, organic, dominant, and often resistless involuntary perversions of this passion; the latter is the true abnormal and organically unnatural sexual perversion,—the reverse, or contrary, sexual instinct. This is the psychiatric aspect of the subject,—the one that most concerns alienists and neurologists. 2. Love and the genesic sense are not one, as is shown in the antedating of love by the appearance of the sexual feeling in the developmental period up to puberty, and its survival beyond the menstrual climacteric in women. In the organic evolution of the individual, love antedates the birth and survives the decay of the sexual feeling, though it is intensified or diminished or otherwise modified or influenced by sexual states. 3. The duty of the hour is to search out the complicating neurological and neuropathic factors and the pre-determining neuropathic conditions, the neurology,—immediate and ancestral,—of these unique, morbid, and unnatural eroto-genesic perversions; to weigh in conjunction the potentialities of physical or psychical environment, and determine, as satisfactorily as we may, in the light of clinical and historical facts and physiological and pathological states, the true mental status of the eroto-sexual pervert. 4. This inquiry involves a study of hystero-erotic attachments and aversions, erotic trances, ecstasies, beatitudes, divine amours, immaculate conceptions, etc., as well as the true *conträre Sexualempfindung*, or psychopathia sexualis. It involves also certain morbid erotic perversions, sometimes observed in epileptically insane women, such as vaginal mutilation with glass, pins, and needles *inter vaginam*, etc.; epileptic and neurasthenic exhibitions. We include all under erotopathia.

In every study of morbid erotism the distinction between love and lust should, according to this author, be sharply drawn, as between healthy erotism and perverted or debased sexual passion. This is necessary to a proper understanding of those historical and every-day recorded instances of pure but perverted Platonic affection and those oft-recurring and startling reversions of sexual love into murderous hate and passion, so often chronicled in the public press. While science should cast the mantle of charity over morbid impulses yielded to in resistless psychopathic states, it must draw the line between similar impulses (depraved and but slightly, if at all, morbid) cultivated and gratified in normal

psychical conditions. It must separate disease from depravity of mind; and herein lies the difficulty of his subject. The question of crime and insanity—often difficult to solve—demands solution by us, as medico-jurists, from known and yet to be acquired psychological and psychiatric data. The subject is primarily neither one of sentiment nor one of morals exclusively, but mainly one of psychiatry, to the study of which the data of alienism and psychology should be rigidly applied in all questions of medical, moral, and forensic inquiry.

François Boissier and George Lachaux, of Paris, ⁹⁴_{Nov., '93} describe two cases of impulsive sexual perversion. One was an exhibitionist, whose obsession was allayed by merely exposing his genitals in the presence of women; the other had an uncontrollable desire to copulate with the lower animals. Otherwise the sexual acts and feelings of the patients were normal. Both showed the characteristic features of obsession as described by Magnan: sudden appearance of desire, a period of painful and anxious struggling against the morbid temptation, the impulsive act, and complete relief. In both cases there was insane ancestry, and the second became an alcoholic and finally insane.

A. J. Bloch, of New Orleans, ¹²_{July, '94} describes two cases of sexual perversion in the female; one a child of $2\frac{1}{2}$ years, precocious and nervous, who was addicted to masturbation. As irritation of the clitoris produced orgasm, this organ was removed, with the result of complete cure. In another case, a married woman, of insane antecedents, who was a masturbator, the ovaries were enlarged and bound down by adhesions. Removal of these organs effected a cure. In another case handling of the mammary gland seemed to provoke an orgasm.

It seems hardly appropriate to class such cases as sexual perverts, but the results of the treatment in the first two make a notice of them important.

IDIOCY AND OTHER DEGENERATIVE PSYCHOSES.

Jules Morel, of Ghent, Belgium, corresponding editor, read an exceedingly able paper before the World's Congress of Charities, Correction, and Philanthropy, in Chicago, ²⁷⁸_{Oct., '93} upon the treatment of degenerative psychoses, discussing the various minor forms of degeneracy, or, adopting the phrase of Koch, "psychopathic

depreciations," and pointing out how they should be managed. Individualization of treatment is the watchword of the author. To many readers his views will appear too roseate, but those who have seen the great success obtained by the author in the Hospice Guislain can understand the source of his enthusiasm. The teacher of degenerates must not consider himself a teacher of the lower classes. He must set for himself a high ideal, and work long and faithfully for its accomplishment.

Passing to the duty of the State in the care of the degenerate, he says: "Why should governments not undertake the creation of special institutions for weak-minded children? Such institutions, if well organized, would certainly diminish the population of reformatories, and also the population of lunatic asylums and prisons. There, doubtless, most of them would be enabled to receive some education. The creation of a law forfeiting parental control on account of incapacity or unworthiness would soon fill up and multiply such institutions. It is in these schools for the weak-minded that the alienist will be enabled to obtain brilliant results, and to separate those capable of education from the hopelessly degenerate. For these latter, also, governments should provide, not in prisons or insane asylums, but in special institutions. They should not be admitted for any fixed time, but for as long as public security, morality, and order may demand it."

Bourneville⁹⁹⁶_{May 10, '94} gives an historical account of the medico-pedagogical treatment of idiocy, which began with Balhomme, a pupil of Esquirol, in 1824. Ferrus, J. P. Falret, Vomis, Itard, Seguin, and Delasiauve followed. After reviewing the methods of training the legs, the arms and hands, and the special senses, the author passes to medical treatment. Local douches into the rectum and the bladder are recommended to tone up the relaxed sphincters. In Bourneville's opinion, premature synostosis has no influence in the production of idiocy. Hence, craniectomy is of no value in its treatment.

H. Piper²⁰⁴²_{'93} has had exceptional facilities for studying the causation of idiocy. Statistics of 416 cases are given,—310 of congenital and 106 of acquired idiocy; 70 per cent. of the cases had convulsions; 32 per cent. were first-born children, although instrumental labor is noted as a cause in only one case. In the congenital class, phthisis of parents or near relatives was noted in

23 per cent.; insanity in ancestors or collateral branches, in 14 per cent.; no cause could be found in 17 per cent.; the father was a drunkard in 10 per cent.; parents or relatives were epileptic in 7 per cent.; syphilis was accused in 5 per cent.; family trouble during pregnancy, and mental enfeeblement in parents or grandparents, each in 4 per cent. Consanguinity of parents was noted in only 3 per cent.; fall of the mother during pregnancy, premature birth, cardiac or renal lesion of



CASE OF ABNORMAL DEVELOPMENT OF THE SCALP. (COWAN.)
Journal of Mental Science.

parents, each in 2 per cent. Only one child had deaf-mute parents. In acquired cases, scarlet fever, diphtheria, and typhoid fever were given as causes in 27 per cent.; measles, in 11 per cent.; rickets and meningitis, each in 9 per cent.; and protracted and severe birth, in 6 per cent. The relation of sexes was 276 males, 140 females. The proportion of congenital to acquired cases is 3 to 1, as against the proportion throughout the German Empire of 2 to 1, and this is probably a more exact estimate.

J. J. Cowan, of Melrose, Scotland, ¹⁶⁶_{Oct., '93} reports two adult idiots

with enormous development of the scalp (see illustrations). There were no other especial features.

Jules Voisin ⁶_{Mar. 24, 94} gives the results of the examination of one hundred and fifty female idiots and imbeciles at the Salpêtrière. The period of puberty was not retarded. In 75 per cent. there were, however, certain anomalies found involving, principally the preputial fold of the clitoris, the labia minora, and the hymen. The prepuce was greatly developed and presented



CASE OF ABNORMAL DEVELOPMENT OF THE SCALP. (COWAN.)
Journal of Mental Science.

numerous folds. The labia minora were frequently very voluminous and apron or flag-shaped, often provided with supplementary folds, giving them the appearance of being double, principally on one side,—that on which self-abuse was practiced. On that side also pigmentation was more marked. The hymen was frequently labiated, presenting more or less numerous folds, recalling, on superficial examination, vegetations. Finally, a large number of these degenerated beings offered unmistakable signs of defloration due to masturbation. This fact is of great medico-legal interest,

for how may this onanismal defloration be distinguished from that resulting from rape? Voisin believes that the unilateral rupture of the hymen; the adherence of the hymen to the labium minus of the same side from the development of cicatricial tissue; the existence of numerous folds on that labium, and its greater development and pigmentation are all irrefutable proofs of masturbating. In rape with penetration the hymen is, on the other hand, generally ruptured in several places; the seats of these tears are not adherent to the nymphæ, and the hymen undergoes retraction and may present minute carunculæ free in the vagina.

Sporadic cretinism has been discussed by B. Bramwell, of Edinburgh ²_{Jan. 6, '94}; W. M. Ord, of London ⁶_{Nov. 4, '93}; H. Owen ²_{Dec. 9, '93}; F. X. Dercum, of Philadelphia ²⁴²_{Sept., '94}; and W. Osler, of Baltimore ⁵_{Nov., '93}. The last-named writer reports eleven cases observed in the United States, exclusive of Dercum's case. The condition is at present attracting especial attention on account of the success reported with thyroid feeding. (See ANNUAL for 1894, iv, F-10.) Ord reports decided success with thyroid extract in four cases; J. B. Hellier, of Leeds, ⁶_{Nov. 4, '93} in one case; Bramwell, in three cases; and decided improvement in a case by F. A. Hoffmann, of Leipzig ¹³_{Feb. 13, '94}.

James H. McBride, of Milwaukee, ⁸⁶⁶_{Sept., '93} concludes a lecture upon epileptic insanity with the following propositions: 1. The forms or varieties of epilepsy liable to lead to insanity are the ordinary *grand mal*, mental epilepsy, nocturnal epilepsy. 2. Nocturnal epilepsy and mental or cerebral epilepsy produce more rapid mental deterioration than other varieties. 3. Epileptic insanity may precede, take the place of, or follow a fit. 4. It may be a quiet type of insanity or the most violent mania. 5. The mania may occur only once in the course of the life of an epileptic who has the disease from childhood. 6. Epileptic insanity is a most dangerous form of mental disorder, as the subject of it is suspicious, irritable, and impulsive, being conspicuously weakened in self-control. 7. There is usually loss of memory of events of the insane period, though occasionally there may be a confused recollection. 8. A condition of mental automatism may follow an epileptic fit which may last for days, during which a person may transact business, buy a ticket and travel distances, converse intelligently, and yet afterward have absolutely no recollection of anything that occurred during the period. 9. The epileptic attacks



Hysterical Stigmata(Hackel)

St. Petersburg Med. Wochenschrift.

may occur during sleep and not during the waking state, and this nocturnal epilepsy is apt to be associated with violence and ultimate mental weakness. 10. Insanity is more apt to be associated with the mild fits called cerebral or mental epilepsy than those in which the convulsions are violent. It must not, therefore, be thought that the condition is a trifling one and the danger of mental disorder slight because the fits are apparently mild and of short duration.

HYSTERIA.

Terrien ⁹⁴_{Dec., '98} gives an account of the prevalence of hysteria in that most interesting section of France known as *La Vendée*. The Vendean peasant possesses a remarkably impressionable nature. Hysterical men and women are legion. Three-fourths of the patients who come for consultation have nervous troubles. Also remarkable is the readiness with which the Vendean obeys suggestion,—the frequent and effective use of hypnotism in the treatment of hysterical neurosis.

The author shows: 1. That hypnotism is an excellent method of treating hysterical accidents—paralyses, contractions, spasms, etc.—in hypnotizable subjects. 2. That in non-hypnotizable subjects recourse must be had to suggestion in a waking condition, since this affords excellent results, giving to various methods of treatment employed a value, an effectiveness not otherwise obtainable. 3. That though hypnotism is so effective in hysteria, it is of no value in the treatment of other nervous ailments, to say nothing of organic affections. If a result is obtained, it is only transitory; when a lasting improvement is noted, this is due to the fact that these nervous ailments or organic affections are associated with hysteria, and that the removal of these hysterical troubles causes the patient's improvement. The author believes that the prevalence of hysteria in the Vendée is due to intermarriages and superstition.

J. Hackel, of St. Petersburg, ²¹_{May 19, '94} reports an extremely interesting case of hysteria with bloody stigmata on the dorsum of the left hand and the flexor and extensor surfaces of the corresponding arm. (See plate.) The patient had other manifestations of hysteria (convulsions, anæsthesiæ, etc.). The hysterical outbreaks were associated with the menstrual periods, which were always extremely painful. Local examination of the pelvic organs gave

negative results. The author denies all possibility of deception. The stigmata appeared daily, exactly at 11 o'clock, and had several times shown themselves directly under the author's personal observation. An explanation of the phenomena is sought in auto-suggestion. The stigmata recall those of the celebrated case of Louise Lateau. The present patient is also a Catholic, and a suggestive coincidence is that daily, at 11 o'clock, mass is said in one of the Catholic churches in St. Petersburg before an altar dedicated to the Virgin as she appeared to Louise Lateau.

Ch. Féré¹²¹_{Aug., '94} reports a case of hysteria in which, after shooting pains in the tibial region, gangrenous patches about the size of a ten-cent piece appeared upon the leg. Ehrl²_{July 21, '94} reports a case in a young girl in which gangrenous patches occurred on the cheek and left arm. A sister of the patient also had localized patches of gangrene on the cheeks and left breast. Féré¹⁴_{Aug. 1, '94} has found that, in a large number of hysterical subjects, the ring and little fingers are shorter on the anæsthetic side of the body. He terms it ulnar *oligodactylie*.

Le Dantec²¹²_{June 10, '94} has found that contraction of the auditory field is as constant a symptom of hysteria as contraction of the visual field. He also states that retraction of the auditory field is in intimate relation with the phenomenon of colored hearing.

H. Verger, of Bordeaux,²⁵_{Feb., '94} reports two cases of hysteria with convulsions and delusions following attendance upon spiritualistic *séances*. Charcot had already reported similar cases.

Féré³_{Nov. 10, '93} ⁸¹⁴_{Feb. 15, '94} has made a study of the condition described by Gélineau under the name "narcolepsy." Böhm, in an inaugural dissertation, has given the details of four cases observed by him in Mendel's clinic, in Berlin. In all of these hysteria was marked; in two there was also hystero-epilepsy, and in one exophthalmic goitre. According to Féré, the desire for sleep is often sudden and irresistible, and the patient falls into slumber as if he had had a stroke of apoplexy or an epileptoid attack. It is not, however, always sudden, but occasionally is ushered in by the normal symptoms of approaching sleep. The average duration of the sleep is from ten minutes to half an hour, though these limits may be greatly exceeded. Narcolepsy is neither a neurosis nor a disease, but is met with in a large number of different affections associated with disturbed nutrition, circulatory changes, and functional

excesses. The disturbances of nutrition most frequently accompanied by narcolepsy are obesity, gout, gravel, and especially diabetes, in which the pathological sleep may in some cases be regarded as a mild form of coma. Narcolepsy is frequently associated with dyspepsia, but the latter is itself a symptom. Graves had observed an example of this condition, which he described as lethargy, in a plethoric man.

Paroxysmal sleep is especially apt to occur in the members of neurotic families, occasionally in conjunction with other signs of morbid emotional sensibility. In a case of Gélinau's even slight emotions were followed by attacks of paresis, with or without narcolepsy. In another observation, recorded by Marduel, the patient had an attack of narcolepsy an hour after an emotion, but the attack was preceded by general tremors. It is a well-established fact, moreover, that emotional disturbances play a very active part in the production of this phenomenon. Two of Gélinau's patients exhibited multiple *tics*. Lastly, in a case of hysteria under Armaingaud's observation, narcolepsy was associated with asphyxia of the extremities; the association of the last two conditions is a point of special interest.

In a number of cases reported by Porter, attacks of narcolepsy alternated with attacks of vertigo or unconsciousness; and in a case described by Gélinau, under the name of "epileptiform chorea," fits suggestive of *petit mal* were replaced by narcolepsy. It is to this condition that the term "epileptoid sleep" has been applied.

Epileptics are not infrequently seized with sudden attacks of sleep of variable duration, analogous in every respect to ordinary attacks of narcolepsy, and the exact nature of which is evident from the fact that they yield to the administration of bromides. Paroxysmal sleep has been regarded as a variety of latent epilepsy.

An attack of sleep, coming on rapidly or suddenly in the midst of apparent health, constitutes a peculiar symptom bearing but little resemblance to any of the various forms of hypnosis. Cases are occasionally met with, however, in which a sudden attack of hypnotic sleep may be produced under the influence of unexpected peripheral irritation; but the exact nature of the condition is easily recognized from the presence of the physical characteristics of hypnosis. There is no narcotic, with the solitary

exception of chloral, capable of inducing sleep so suddenly, and the irresistible somnolence observed during the day in children and convalescents, after hæmorrhage or a violent emotion, differs markedly in its mode of onset, intensity, and duration from the attacks of paroxysmal sleep occurring independently of the presence of various etiological conditions.

The stertorous variety of paroxysmal sleep is apt to be mistaken, in the absence of information as to previous attacks, for other conditions, but the difficulty disappears when the patient awakens. For example, it is apt to give rise to a suspicion of alcoholism, and this is a source of constant anxiety with some patients.

Hysterical sleep usually comes on gradually; moreover, it is obviously associated with other hysterical manifestations, and the attacks are of longer duration than those of narcolepsy. It should be borne in mind, however, that attacks of hysterical sleep may also, in some cases, commence abruptly.

It is only in tropical climates that narcolepsy has to be distinguished from the hypnosia, or sleeping sickness (*nelavan*), of negroes. This latter, which has been compared with pellagra, is continuous, and invariably limited to the west coast of Africa, between Senegambia and the Portuguese colony of Benquila, and to the West Indies.

Gerlier's "paralyzing vertigo" is an epidemic disease met with in summer and autumn among stable-boys and others in contact with horses. It is apparently due to specific miasmatic influences, and characterized by headache, vertigo, weakness in the limbs, pain in the nape of the neck, dysphagia, bilateral incomplete ptosis, and somnolence.

Nona is an affection the real nature of which is still obscure. It is met with in Switzerland, Italy, Dalmatia, and Hungary. Like the above, it is characterized by somnolence and rapidly proves fatal.

It is only by a process of induction that we may arrive at the flattering conclusion that we know something about the pathology of paroxysmal sleep. The pathological physiology of this symptom being based on no experimental data whatever, it is necessarily obscure and cannot serve as a basis for a rational method of treatment. The therapeutics of paroxysmal sleep are practically, there-

fore, those of the disease with which it is associated. It should be borne in mind, however, that much benefit may be derived from such means as are capable of promoting hæmatisation, provided they are not contra-indicated by the principal affection. Hydrotherapy, static electricity, compressed air-baths, and oxygen inhalations may be employed with advantage. The last method proved rapidly successful in a case of hysterical narcolepsy which had resisted a prolonged course of constitutional treatment.

Chaumier ⁵¹_{Apr., '94} considers hysteria as it occurs in young children. Convulsions in children have generally been considered by most authors as corresponding to chill or delirium in the adult. The mildest form of hysteria in infants is characterized by repeated attacks of screaming without apparent cause. In the more severe cases the limbs become stiff, the face cyanotic and turgid, less seldom pale; trembling is sometimes an accompaniment. Many children throw themselves about on the bed or floor, carrying out with the feet and hands the so-called *grandes mouvements* without completely losing consciousness. In the most severe form the child ceases to scream, and loss of consciousness follows. The body is usually stiff, the mouth held wide open. The onset may occur with a coughing attack, either with pertussis or an ordinary bronchitis.

Moizard ²¹²_{Apr. 10, '94} reports a case of phantom tumor in a girl of 11 years. Anæsthesia caused complete disappearance of the tumor, which re-appeared when the anæsthesia was discontinued. Neither suggestion or other treatment had any influence upon the swelling.

Jules Simon ¹⁹_{May 5, '94} considers at some length the treatment of hysteria in children. He advises removal from their accustomed surroundings and family, a quiet life, and tonic treatment. Anti-spasmodics are sometimes indicated. Potassium bromide does not always give good results. Valerian is best administered in a decoction. Of the valerianate of ammonia, a dessertspoonful may be taken at 10 in the morning and 6 in the afternoon. Zinc may be also employed in pill form. Opium is to be avoided, as it favors constipation and decreases the appetite without restoring intellectual equilibrium. Preparations of belladonna or hyoscyamus, in doses of 0.01 gramme ($\frac{1}{6}$ grain) of the extract, are useful, especially in the visceral pains. Camphor, by rectal injection, may also yield good results. Iron is to be excluded, as an attempt to cure the anæmia

will cause excitement. It would be preferable to administer sulphate of lime in the summer and codliver-oil during the winter. Electricity, which would seem to be indicated, has not given any decided results. The galvanic current has been frequently employed by the author without success; an intense faradic current will only increase nervous excitement. Slight galvanic currents with moderate massage are the best. Nux vomica does not render any useful service; it is not the terminations of the nerves which are diseased, but the will, a temporary abdication occurring. Hence the indications are to excite neither the brain nor the skin, and to employ, together with isolation of the patient, valerian, hyoscyamus, etc. The electric bath is warmly recommended by Sagretti, of Rome, in the hysteria of children.

E. Hecker, of Wiesbaden, ¹¹⁶_{Apr., May, '94} believes that the treatment of hysteria should be primarily psychical. Regarding hysteria as a psycho-neurosis, this would seem rationally indicated. However, Hecker, as well as many other modern writers, overlooks the profound importance of physical diseases, not only in intensifying, but also in causing hysteria. Under the influence of Charcot, Mœbius, and others, the etiological importance of somatic disease in the development of the psychical manifestations of hysteria is being minimized. The treatment by suggestion has at present full sway, but, while many cures are reported, their permanence remains to be established.

J. Daland, of Philadelphia, ¹¹²_{Apr., '93} reports a case of hysterical convulsions cured by hypnotic suggestion. A. Voisin, of Paris, reports ¹⁴_{July 22, '94} a case of hystero-epilepsy cured by hypnotic suggestion in several sittings, after a year's treatment with hydrotherapy had failed. Dumontpallier ¹⁴_{July 22, '94} cured a case of uncontrollable vomiting by the same means. G. J. Preston, of Baltimore, ⁶¹_{Jan. 27, '94} cured two cases of hysterical lock-jaw by suggestion in the waking state, using a mild galvanic or faradic current as a medium for the suggestion. J. Luys ²⁴_{Jan. 7, '94} reports a case of hysterical retention of urine in a man of 25 years. The retention had lasted at intervals for several weeks. A single transfert *séance* with an hypnotized subject produced a permanent cure. R. del Valle y Aldebalde ⁶¹³_{Oct. 30, '93} reports a case of hysteria with insomnia, vomiting, intermittent fever, and loss of appetite cured by means of suggestion in the waking state.

Th. Balade ²_{Sept. 8, '94} has successfully arrested violent hysterical

attacks by forcible traction upon the tongue, drawing the organ out of the mouth and keeping it in that condition for some time.

HYPNOTISM AND SUGGESTION.

S. Grosso, of Naples, ²⁴²_{Aug., '94} has made some experiments on the endocular circulation in the transition from hypnotic sleep to the waking state and *vice versa* in two individuals. There is a sensible dilatation of the pupil, continuing during the hypnotic state, losing the faculty of reaction and accommodation to regain it on passing over into the waking state. The suggestion of cold is followed by a dilatation of the retinal vessels and hyperæmia of the fundus. A suggestion of heat determined a restriction of these vessels and consequent anæmia of the ocular fundus. These conditions disappear on returning to the normal. Suggestions of pain and joy determine, respectively, relative anæmia and hyperæmia of the fundus. In the second subject contrary results were obtained, the author explaining this by the fact that various drugs produce varying effects,—*i.e.*, either toxic or therapeutic results in different individuals. He thinks that these experiments will aid to explain scientifically sleeping and waking states. The work is the first of its kind.

Moricourt ⁵⁸⁷_{Nov. 11, '93} ⁵_{Mar., '94} states that in hypnotized subjects we may find exaggeration of sensibility during the period of somnambulism which permits them to feel, in some minutes, the effect of the metals, and that during the period of lethargy the neuro-muscular hyperexcitability permits them to appreciate the aptitude, more or less great, of the different metals to contract the different muscles of the face or limbs. But since all subjects cannot be hypnotized, the new method consists in placing an hypnotized person in contact with the one whose idiosyncrasy toward metals it is desired to know. A person upon whom metals acted only after some hours was placed in contact (hands) with an hypnotized subject, and the application of different metals (copper, tin) to the patient was followed by a speedy impressionability to metals, which has since remained. The patient was neuropathic to a great degree, but sensitiveness to heat, draughts of air, and gastric symptoms disappeared. It is evident that a latent aptitude for the metals can be awakened by contact with an hypnotized person, and that this person may communicate by contact this impressionability.

W. R. Newbold, of Philadelphia, ⁸⁰⁸_{Feb., '34} offers a theory of hypnosis which, while not differing essentially from that of Liébeault, is not clearly expressed. He says: "We do not know whether the voluntary activity of the self is definitely related to some cortical area, as the various special senses are, or whether it is related to some organized system of processes distributed through the entire cortex. And as this is the psychical activity which is most profoundly modified in hypnosis, we may suppose that those portions of the cortex which are concerned with its manifestation are those chiefly modified in hypnosis. Yet we have reason to suppose that other changes take place, whose exact character we do not know at all. If, however, we ask to what other changes this modification of the processes connected with the manifestation of self-consciousness are most nearly related, we may say, with some confidence, that they are most nearly related to the changes that normally take place in sleep. In normal sleep the continuous ebb and flow of molecular change that accompanies waking life slowly and irregularly comes to a stop. Some little may remain in various portions of the brain, but it is for the most part in a state of comparative quiescence. In hypnosis we have reason to think that a similar stilling of the molecular activities begins to spread throughout the brain. In some way, which we cannot now explain, the fixation of attention and voluntary limitation of the conscious field inhibits the activities connected with the conscious self first. If we leave the patient to himself, these activities will either reassert themselves or else the same change will spread on throughout the brain until the patient is in a normal sleep. And in the case of some persons this is the only effect that we can produce by the use of agencies which induce hypnosis in others. But if we do not leave the patient alone, but give him suggestions, we find that a large portion of the brain remains sensitive; that induced mental states or cortical processes work out results which cannot be obtained in the patient while in the normal state. Hence hypnosis is, in a sense, a normal state artificially prolonged. It seems probable that the methods we use to produce hypnosis have a specific effect in determining the order in which the cortical activities are to sink into sleep. Yet the changes which take place in hypnosis probably do not essentially differ from those of normal sleep."

A. S. Warthin, of Ann Arbor, Mich., ⁹_{July 28, '94} has made a series of experiments to determine the effects of music upon hypnotized subjects. It was found that the mental images and the emotions produced by certain musical compositions were practically the same upon the different subjects experimented upon. In some, however, the effects were more intense than in others. Thus, Wagner's "Ride of the Walküre" produced a doubling of the pulse-rate and other evidences of great excitement. The fire music from the closing scene of the walküre also produced increased pulse-rate with greater fullness and less tension. To one subject it brought up an image of flashing fire; to another, of waters rippling and sparkling in the sunshine; to another, of an ocean in which great breakers threw up glittering spray into the sunshine; the chief idea being in every case that of "sparkling." A number of other experiments were made and frequently repeated, always showing a profound influence of the music upon the hypnotized subject. The author believes that these experiments should be conducted with great care, as they may be attended by danger. A change from a major to a minor chord produced a depression almost amounting to collapse. The most intense effect was produced upon the most hypnotizable subject.

J. G. Natanson, of Ivry, ²⁴_{July 22, '94} reports the successful treatment of a case of neurasthenic insomnia by means of suggestion in the waking state. Crocq, Jr., of Brussels, ⁸⁶⁸_{July 28, '94} has studied the action of magnets and of toxic and medicinal substances upon hypnotized subjects, and concludes, with Bernheim and Voisin, that the action of agents at a distance is due to suggestion.

MISCELLANEOUS.

F. St. John Bullen, of Wakefield, ¹⁶⁶_{Oct., '93} advocates the establishment of out-patient departments for mental diseases. In some cases advice and treatment early obtained in this way by the poorer classes might obviate the necessity of committing a patient to an asylum. In some of the German hospitals the out-patient department for mental diseases is of great use, especially for teaching purposes. An out-patient department was started at Wakefield in 1890, and up to March, 1893, 116 cases had been treated, of whom 12 recovered and 16 were improved. The author pleads for an extension and fair trial of the system.

Dittmar and Schüle⁸⁶⁶_{June, '94} give the following advice with reference to visits to patients in insane hospitals: 1. Visits should not be allowed in recent cases of melancholia; at least, until the acme of the disease has passed. Morbid fears, with or without imperative ideas, contra-indicate visits in proportion to their severity. Occasionally, visits are desirable to enable the patient to realize his situation, and especially if natural, not morbid, nostalgia exist. In cases of refusal of food, a sensible talk by relatives may change the current of the patient's mind. 2. In mania it is self-evident that visits are inadmissible in severe cases. Even in light cases they had better be omitted, except in cases where family anxieties or business or personal troubles act as a psychological irritant. In such cases a visit, especially from distant relatives, often quiets the patient. 3. Acute cases of paranoia are to be treated like the preceding, according to their exaltive or depressive characteristics, but even with greater caution. Of course, if the visitor is the subject of the patient's delusions or has any connection with them he must be excluded. This applies, also, to the acute exacerbations of chronic conditions. 4. Conditions of atony and stupor contra-indicate visits until convalescence is pronounced. 5. The same rule holds good in acute dementia, with even greater strictness. 6. Chronic paranoia submits to no exact rule in this respect. The condition of the patient, the common sense of the visitor, and his relation to the delusions must be considered. Delusions of being watched contra-indicate visits. In the expansive forms greater liberality may be indulged in, as a timely visit may act as a corrective. The attempt should only be made, however, when all the symptoms speak for beginning improvement. 7. In conditions of chronic dementia, frequent visits may quiet and cheer the patient. 8. In the initial and excited stages of dementia paralytica, visits should be interdicted. In the later stages no restrictions need be placed on them. 9. In alcoholic psychosis the visitors should be selected, and, if not entirely trustworthy, should see the patient only in the presence of witnesses. 10. In hysterical and constitutional psychoses, especially in moral insanity, no visits, if possible, or only after careful instruction of the visitor in regard to behavior. 11. Visits to epileptics should be allowed only during the presence of assistants, owing to the danger of sudden violence.

Surg.-Capt. J. H. Tull Walsh, of Calcutta, ¹⁶⁶_{Jan., '94} writes of Indian hemp as a cause of insanity in India. This is smoked, drunk, or eaten. Most of the cases are of a temporary character quickly recovered from. In others a more persistent form of mental disturbance occurs, which, however, usually ends in recovery after a few months.

THERAPEUTICS.

J. Massaut, of Liège, has used, ⁶⁸⁵_{Dec., '93} with good results, hypodermatic injections of duboisine sulphate as a sedative. The dose used was 0.00125 gramme ($\frac{1}{80}$ grain). Larger doses are less desirable, as untoward effects are likely to be produced. Duboisine is considered superior to hyoscyne and hyoscyamine. The effects varied in different cases. Often a single dose will quiet a restless patient for the day and give him a good night's sleep. Marandon de Montyel ¹⁵²_{Oct. 13, '93} has continued his studies on duboisine (see ANNUAL for 1894), giving it in interrupted doses. He still claims excellent results for it as a calmative in states of excitement, but deplors its unfavorable effect upon nutrition.

Chloralose (chloral glucose; see ANNUAL for 1894, v, A-24), of which much was expected as an hypnotic, has been used by the same author, ¹⁵²_{Aug. 24, '94} in daily doses of 0.3 gramme ($4\frac{1}{2}$ grains), in nine cases of hallucinations. In eight the symptoms were rendered distinctly worse, while in the remaining one the effects were doubtful. He therefore considers the remedy as no enrichment of psychiatric therapeutics. On the other hand, Léon l'Hoest ²⁹³_{July, '94} has had very favorable results with the drug as a calmative in sixteen cases. The dose given was 0.3 gramme ($4\frac{1}{2}$ grains) to 1 gramme ($15\frac{1}{2}$ grains).

B. Szalay ⁶⁸_{May, '94} has tried bromhydrate of scopolamine as a sedative in seventy-four cases of insanity. He gave it in watery solution of 4 to 1000, in doses of 0.0011 to 0.002 gramme ($\frac{1}{60}$ to $\frac{1}{32}$ minim) hypodermatically. It is not an hypnotic, but a sedative. It has no unpleasant incidental effects. In four of the cases vomiting occurred. In the majority the pulse was accelerated.

Bromoform has been used by M. Ponticaccia, of Venice, ⁴¹_{Aug. 16, '94} as a sedative in states of excitement. He gives 15 drops the first day and increases the dose 5 drops every second day until the daily dose of 30 to 50 drops is reached. The only untoward effect ob-

served is occasionally a slight diarrhœa. It acts most promptly and effectively in recent cases.

Legrain and Bourdin, of Paris, ⁶²_{Jan., Feb., '94} have injected Brown-Séquard's liquid and phosphate of soda in sixteen cases of insanity without obtaining any effect upon the mental state and slight improvement of the physical condition. R. P. Ryan, of Norfolk, ²_{Feb. 3, '94} injected brain-extract in six cases with apparently good effect in one.

Brough, of Lochgilphead, ¹⁶⁶_{Oct., '93} gives notes of five cases in which refusal to take food was overcome by the administration of 30 to 50 grains (2 to 3.20 grammes) of sulphonal. In all the cases forcible feeding had been resorted to before using the sulphonal.

INEBRIETY, MORPHINISM, AND KINDRED DISEASES.

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ALCOHOLIC INEBRIETY.

Alcohol and the Nervous System.—Forel, of Zurich, ⁷²³_{Nov., '93} teaches that the alcoholic intoxication of the nervous system is conspicuous from the first, often after very small doses. The excitement following the first glass is the effect of a paralyzation of the complicated checking apparatus which usually controls instincts, impulses, and thoughts. Mentally alcohol paralyzes, in the first line, the highest, most complicated, and finest conceptions,—conscience and reason. He states ⁷²³_{Dec., '93} that chronic alcohol poisoning produces mental disorders. Psychopaths, or nervous people, are extremely susceptible to the narcotic action of alcohol in disease, as well as in health, even when the disease is not of alcoholic origin. Very small doses of alcohol will, in such persons, give rise to considerable phenomena of alcoholic poisoning. He has seen severe delirium tremens after such comparatively small quantities as $1\frac{1}{2}$ to 2 litres (quarts) of cider daily. There are many more psychopaths among drunkards than was formerly believed. The poisoning by alcohol and the psychopathy predispose to each other. The poisoned becomes psychopathic, and begets psychopaths; the psychopath often becomes inebriate, and begets drunkards. Strümpell, of Leipzig, ³³⁷_{Jan., '94} compares poisoning by alcohol to poisoning by lead. Lead is slowly absorbed for a long time without any injurious effects. The absorption and operation of each daily small quantity of the poison is inappreciable; but the worker in lead, after some years, suddenly develops grievous symptoms of lead poisoning,—colic, paralysis of the hands, an epileptic stroke, or such like. All experience points to the fact that the nervous tissue is specially exposed to the cumulative action of poisons in minute doses,—a series of phenomena resembling the aspect of a species of memory of the nerve-fibres and ganglionic cells.

Permanent consequences of the chemical action of alcohol on the easily-destructible nerve-tissue inaugurate imperceptible changes in the structure, which increase gradually and pass over to a permanently-diseased condition.

Crothers, of Hartford, ³³⁷_{Oct., '93} refers to the pictorial representations, on the ancient Egyptian tombs, of states of stupor, nausea, vomiting, administration of drugs, showering of water, massage, flagellation, and inunctions of the body as proofs of the ancient medical treatment of inebriety. Hippocrates recognized the disease. Recently it has been alleged that this long-recognized disease could be cured in a fortnight or so by various obscure remedies or processes. Confidence in permanent cure, by unknown measures, in a brief time, is always open to suspicion of hysterical credulity. The central object of all treatment is to remove the causes which demand spirits for relief. Sir B. W. Richardson, of London, ³⁸_{v. 10, No. 39, '93} in treating of the relations of idiosyncrasy to alcohol, turns the tables upon those opponents of abstinence who contend that abstainers have an idiosyncrasy for keeping up their strength under nephalism, which, it is alleged, other persons who are non-abstainers do not possess. He points to the multifarious human constitutions belonging to persons who abstain and thrive, and to the more than human capacity for strength and physical power appertaining to the abstaining lower creation.

Initiation in the moderate use of wine, spirits, or malt-liquor would be the surest mode of running down the physical potency of animals beneath man in the scale of animated beings. Alcohol-drinkers, moderate or immoderate, are affected by a special idiosyncrasy in that they have a liking for a particular thing, of which they crave more, and, getting more, stand in peril unless always on guard, and then even in danger. In discussing the nature of inebriety, T. L. Wright, of Bellefontaine, ⁶¹_{Sept. 30, '93} traces the effects of alcohol upon the nerves, the blood, and the physical integrity of essential organs and tissues. Alcohol is carried everywhere by the circulation, and in drunkenness the functions of the muscular system are hampered and deranged. This arises largely from the property of alcohol of imposing a degree of paralysis upon the nervous system in all its parts. There is loss of muscular power, with disorder of the functions of muscular co-ordination. Though flushing of the face from paralysis of the cervical sympathetic is

usually the commencement of intoxication, it is not always so. Sometimes, especially in neurotic periodical drinkers, there is rather an appearance of spasm and rigidity of the capillary vessels, their calibre being apparently diminished. There may also be pallor of the face; sharp and contracted features; nose pointed, cold, and colorless. The eyes may be steady, though quick in movement; bright, and penetrating. The words are "clear cut," perhaps clept, and spasmodically uttered. The primary effect of alcohol on the neurotic may at times be that of shock. During this state of nerve-spasm there is danger of violent and unreasonable outbursts of rage and hate, for there is an unnatural exaltation both in the power and the disposition to wreak vengeance for fancied wrongs. The action of alcohol on the peripheral nerves marks it as a poison. It has a special affinity for the plantar, popliteal, musculo-spiral, and tibialis anticus, as well as the phrenic and pneumogastric nerves. In the blood alcohol destroys the property of transforming all its hæmoglobin into oxyhæmoglobin. From the toxic influence on the red corpuscles occurs the undue collection of carbonic acid within the organism. A deficiency of oxygen may favor the establishment of the gouty or rheumatic diathesis.

Henry C. Coe, of New York, ⁸¹⁴_{Feb. 1, '94} has found hysterical manifestations produced by alcohol in two groups of cases: (1) those of young women, naturally well balanced and unaccustomed to the use of alcohol, who take an amount which (for them, at least) is excessive; (2) cases of older women, of a neurotic type, who are accustomed to use spirits more or less freely. Certain phenomena of true hysteria are usually absent in those who are under the influence of alcohol, such as the visceral manifestations, areas of anæsthesia, paralyses, and contractures. The diagnosis is often very difficult, especially at the time of the menstrual period, when so many women use spirits for the relief of dysmenorrhœa. Alcohol should not be prescribed, particularly to young girls, during the menstrual period or in slight ailments. Cases of hysteria after inebriety are clearly traceable to this dangerous practice. A small amount of alcohol would upset a woman not an habitual tippler.

Freyhan ³²⁶_{V. 51, p. 6} ²⁶_{Apr. 2, '94} cites 120 cases of alcoholic nervous affection, of which only 19 could be classed as polyneuritis. Of these the motor form was the more frequent, the ataxic second. One

case of hemianæsthesia attributed to hysteria was aggravated by alcohol. All the alcoholics showed great irritability and weakness in all the ramifications of the central nervous system, constituting alcoholic neurasthenia. In these cases there was muscular irritability, the slightest mechanical stimulus setting up contraction, twitching of the fibrils, tremor, but no reaction of degeneration and no paralysis; in the sensitive sphere there was a varying degree of hyperæsthesia; patellar and skin reflexes were intensified. Freyhan could not determine whether alcohol was the only factor, nor could he detect transmission to typical neuritis. From the latter the differential diagnosis of the neurasthenic form is not difficult. The prognosis is more unfavorable.

François Hue, of Rouen, ²⁰³_{Nov. 1, '93} cites the case of a man, aged 42, who, while in the height of alcoholic delirium, severed his genitals with a knife and wounded himself in three places on the chest, when laboring under the delusion that he was pursued by the police. Klippel ⁸⁶⁸_{Nov. 11, '93} states that the cerebral lesions in alcoholic delirium are of two varieties. One form is found in all alcoholics, and is derived from the alcohol itself. The other is derived specially from the form of delirium, and does not take its origin directly from the poison. The first affects the vessels and the nerve-cells. The atheroma affects the vessels with greater intensity the more the calibre is reduced. Nerve-cells undergo granular pigmentation and fatty degeneration. In the second group are congestion (as in delirium tremens), hæmatic pigmentation in the capillaries and nerve-elements, and degeneration of the nerves and fibres of the cortex, betokening general paralysis. Collet ²¹¹_{July 22, '94} reports a case of delirium tremens, presumably from absinthe, in a man of 59, with general tremors and reflex hyperexcitability, but with neither nystagmus nor trembling tongue.

Alcoholism and Depopulation.—It is stated ²²_{June 13, '94} that in 1789 France was considered the most thickly populated country in Europe, representing 27 per cent. of the total European population, while to-day she represents only 12 per cent., the excess of the death-rate being infantile. During the past ten years 42,000 children were still-born, 240,000 children between the ages of one year and five years dying annually. Apart from other causes largely contributing to this depopulation, marked pre-eminence is by general consent attributed to alcoholism, which is rapidly

affecting the French people. This has largely been occasioned by the increasing manufacture of wine charged with impure alcohol, consequent on a demand springing up after the destructive invasion of the vineyards by the phylloxera, and by the growing popularity of absinthism. Drunkenness is a fertile cause of impure and unhealthy issue. The simple condition of drunkenness at the moment of procreation suffices to induce physical and mental inferiority in the progeny. This degradation of constitution may result from parents who habitually indulge in alcoholic liquors, although they may not be intoxicated at the time of the physiological act.

Heredity. — Legrain, of Paris, ²²_{June 13, '94} head physician of an asylum, has traced the history of 819 descendants of 215 alcoholic families. There were 121 premature deaths, generally from convulsions; 38 cases of physical debility, 55 of tuberculosis, and 145 of mental derangement. The remainder comprised a large number of epileptics, hystericals, idiots, etc. Forel, of Zurich, ⁷²³_{Dec., '93} states that it is well known that chronic poisoning by alcohol is transmitted to the progeny of the drunkard. It frequently causes, in the descendants, an irresistible longing for alcohol, as well as a variety of other diseases,—debility, dwarfed growth, idiocy, mental disease, etc. The hereditary craving may proceed from a father or a mother, neither of whom possessed this craving, but were drinkers only by custom or sociability. In mental respects, abnormal persons (psychopaths) bear alcoholic liquors badly and are easily intoxicated. Corre, of the French military service, ³³⁷_{Jan., '94} thinks that 40 per cent. of the crime and bad conduct comes from inebriate parental degeneration. Virgilis, of Italy, ³³⁷_{Jan., '94} says that 32 per cent. of all the criminal population have inherited criminal tendencies from their parents. Both authors state that the excessive parental use of spirits is the fruitful cause of criminality in the offspring. C. H. Hughes, of St. Louis, ⁹⁸_{Jan., '94} recalls Morel's typical table of inebriate neuropathic degeneration through four generations. First generation: immorality, alcoholic excess, brutal degradation. Second generation: hereditary drunkenness, maniacal attacks, general paralysis. Third generation: sobriety, hypochondria, lypemania, systematic mania, homicidal tendencies. Fourth generation: feeble intelligence, stupidity, first attack of mania at sixteen, transition to complete idiocy, and probable extinction of family. Many men who fall into persistent drunkenness are

unaware of the neuropathic heritage of unsteady nervous organism bequeathed to them through alcoholic and other nerve-depressing influences operating on their ancestors. Not understanding the tyranny of their unstable nervous systems, they censure themselves as fools for each repetition of a bout of drinking, resolve and re-resolve not to do it again, then go on and do the same, in the majority of instances, unless aided by medical art to overcome the otherwise resistless tyranny of a degenerated organism.

A striking case of the physical and moral degeneracy of the offspring of alcoholic inebriates is presented by Haushalter, of Nancy.⁹² The father, aged 40, exhibits the symptoms of an habitual drunkard; the mother, of the same age, looks worn, with the aspect of an old woman. Neither has had syphilis. The fourth male child (first was still-born), aged $7\frac{1}{2}$ years, was brought into hospital in a wretched state, though a full-term child and robust at birth. It was emaciated, pale, with dry, squamous skin; contrasted with the stunted figure the penis was enormous, the prepuce œdematous and inflamed, the urine containing neither pus nor albumin, but passing constantly, drop by drop; the abdomen very prominent; the child perpetually addicted to masturbation. He was morose, silent, crying, and terrified on the slightest occasion. A comparison between the measurements of this child of $7\frac{1}{2}$ years with those of normal children of the same age, of 4 years, and of 5 years, shows an extraordinary retardation of development. Haushalter, from these signs, with clear, faint sounds of a latent chest-tuberculosis, in the absence of syphilis and rachitis, attributes this striking physical and moral degeneracy to the fact that the child is the last-born of an alcoholic father.

Tuberculosis and Alcoholism.—In discussing the relations of alcoholism to tuberculosis, Thorain, of Paris,¹²⁶ July 15, '94 expresses the opinion that, as alcohol is associated with other factors in the production of tubercular disease, it is difficult to exactly determine the relative influence of all these factors. I remember how, in Scotland, thirty years ago, whisky, freely ordered, was esteemed a valuable remedy for phthisis, and how enormous were the quantities medically prescribed, though I never believed that an alcoholic intoxicant was of any value. Now that delusion is all but exploded in Great Britain; yet probably a goodly proportion of the medical profession, throughout the world, to this day believe

in the preservative influence of alcohol as a prophylactic against tubercle, especially in the lungs. Thorain, however, supports Lancereaux's assertion that alcoholism plays an important part in the etiology of tuberculosis, and holds that, by debilitating the organism, chronic alcoholic intoxication often favors the onset, sometimes rapidly, of tuberculosis. He believes that one of the most efficient prophylactic measures against tubercle would be the repression of the progress of alcoholism. Tison, of Paris, ¹⁵³_{Aug. 30, '94} says that the two most common causes of tuberculosis are troglodytism and alcoholism.

Beer-Drinking.—Lambert Ott, of Philadelphia, ⁹_{Jan. 6, '94} after fifteen years' observation among beer-drinkers, describes the physical peculiarities of workers in a brewery as a florid complexion (due to capillary varicosity) and a tendency to the accumulation of fat. Even in excessive use of beer, individuals rarely fail to put on fat. Those who persist in remaining lean and bony are the subjects of a vicious inheritance. The blood of these brewery-workers, microscopically, shows an increased proportion of red and a diminution of white corpuscles. An inveterate beer-drinker, suddenly ceasing his drinkings, suffers no inconvenience except a temporary longing, besides a rapid loss of flesh and a decline of the florid color. Those consuming large quantities daily, and eating very little food, after a time become stupid, dull to their surroundings, and aroused from this semidrowsiness only by a fit of anger or an exciting incident. This mental torpor disappears with the correction of the habit. In spirit-drinking, sudden abstention prevents a rapid return to the normal, but this is not so in beer-drinking. In the beer-drinker stone in the bladder and cystic diseases are rare, and he acquires an enormous bladder-capacity, passing at one time a quart or more of urine. Ott denies that beer retards digestion. Though the Germans drink three and four large glasses of beer with their luncheon daily, he has never heard any complaints of indigestion, whereas he found the opposite to be the case with the whisky-drinker. He had examined the vomit of the latter five or six hours after eating, and had seen no indication of the chymification of the food. Among the pathological conditions produced by excess in beer, the foremost observed was subacute gastritis, which was most prevalent in summer. Of 100 cases, 78 occurred in June, July, and August, from pouring

cold beer into an empty stomach; but he observed that generally those suffering from gastric trouble took their morning "schnapps," with half a dozen drinks between their drinks of beer. Those who restricted themselves to beer suffered less, especially if taken during or after a meal. The symptoms are: lassitude, anorexia; emesis, particularly in the morning, of food and mucus mixed with bile; heavy, dull, epigastric pain; tongue swollen and beefy, with red edges; weakness, headache, nausea when smelling cooking; temperature seldom over 100° F. (37.8° C.); gastric tenderness, relaxed bowels, perspiration on exertion, and palpitation, extreme nervousness, sometimes insomnia; an aversion for all drinks; urine scanty, high-colored, and loaded with urates. The average duration of the attack is from three to seven days; the prognosis favorable. In 200 brewers examined there were from two to four motions daily, constipation being very rare. Cirrhotic kidney and hob-nail liver are not found in the beer-drinker. In 80 cases of acute alcoholism and delirium tremens 75 per cent. took daily six to eight drinks of spirits, in addition to the beer. Acute alcoholism is much more common than delirium tremens. Strümpell, of Leipzig,³³⁷ states that in Bavaria the laborer can buy four quarts (litres) of beer for twenty-five cents. At an outside estimate, this quantity contains 240 grains (16 grammes) of carbohydrates and scarcely 32 grains (2.07 grammes) of albumin.

Alcoholism in Infants.—Henry Koplik, of New York,⁷²³ calls attention to the large number of infants suffering from acute or subacute gastro-intestinal disease, who are the victims of an unrestrained administration of whisky or brandy. The parents have been told by a physician to give spirits without definite direction as to dose. The mothers, in their ignorance, overdose their children, adding alcoholic stupor to the previous illness. He has often seen infants nursing a warmed solution of a teaspoonful or more of brandy, whisky, or gin to half of a nursing bottle of tea or spiced water. Such infants are given these spirituous solutions continuously for hours. Some infants are easily intoxicated. Demme saw a boy of 15 years acutely intoxicated by a drachm (4 grammes) of whisky. Koplik had a boy of 12 years, who became hysterically intoxicated on a very small glass of sherry-wine. The customary addition of one-half to one teaspoonful of cognac to the milk for children, given for a time, disturbs diges-

tion, causing chronic stomach irritation and dyspepsia. Koplik has often washed the alcohol out of infants' stomachs.

Consumption of Alcohol.—From a recent report of the French Minister of Finance, ⁶_{Sept. 8, '94} it appears that the amount of litres of alcohol annually consumed per head in populous French towns ranges from 1.4 at Béziers to 18.3 at Cherbourg. Rouen shows 16.8; Havre, 16.2; Caen, 15.8; Boulogne-sur-Mer, 12; Amiens, 11.6; Lorient, 11; Brest, 10.8; le Mans, 10.3; Versailles, 9.8; St. Quentin, 9.6; Besançon, 7.3; Lille and Roubaix, 7.2; Paris, 7; St. Denis, 6.9; Angers, Tourcoing, Grenoble, and Levallois-Perret, 6.8; Clichy, 6.6; Troyes, 6.5; Dijon, Orléans, and Calais, 6.2; Cette, 5.9; Nantes, 5.8; Lyon, Nancy, Tours, and Avignon, 5.5; Clermont-Ferrand, 5.2; Bordeaux, 5; Limoges, 4.7; Bourges, 4.6; Nice, 4.4; St. Etienne, 4.3; Nimes, 4; Montpellier, 3.8; and Toulouse, 3.2. The amount taken is thus very much greater in the north than in the south.

Grigorieff ³¹_{Sept. 12, '94} reports that in Russia, in 1892, the tax on spirits was 268,818,719 roubles, or 21 millions more than during the preceding year. In 1892 the strength of the anhydrous alcohol used per inhabitant was, in the districts of St. Petersburg and Moscow, 62.7 degrees, and in those of the south of Russia, 27.2 degrees. In Finland, from 1884 to 1888, the mean was 3.53 litres (quarts) per person. In Belgium, from 1880 to 1883, it was 12 litres (quarts) of alcohol and 250 litres of beer. In Holland, in 1892, each inhabitant used a mean of 8.92 litres of alcohol at 50 degrees. In Denmark 15 litres of Alcohol are counted for each person; in Sweden, 6.5 litres; in Norway, 2.8 litres; in France, 8.5 litres at 50 degrees; in Germany, 4.6 litres of pure alcohol; in Austria, 32 litres of beer, 22 litres of wine, and 7.8 litres of other alcoholic drinks; in Switzerland, 6.32 litres of alcohol at 50 degrees; in Italy, 1 litre of wine per inhabitant.

It is computed ²_{Feb. 24, '94} that, in 1893, the estimated retail cost of the intoxicants consumed was £138,854,829,—a decrease from the preceding year of £2,011,433, or rather less than 1½ per cent. This amount is arrived at, after taking into account a decrease on spirits of £1,830,104, and on wine of £412,716, as well as an increase on beer of £231,287. The average per head in the United Kingdom was £3 12s. 3d., the estimate of the population at midsummer having been 38,429,992.

Fazio, of Naples, ¹⁵³_{June 7, '94} says that, owing to the dearness of wine, alcohols of a bad nature (industrial alcohols) are being consumed in Lombardy, Venetia, Liguria, and elsewhere in Italy. In Piedmont, a wine country, less spirit and more wine are drunk. The same ought to be true of Tuscany, Umbria, and Latium, being also wine countries; but the tendency of the working classes to Bacchic excess and the dearness of wine have made the consumption of distilled drinks display cases of alcoholism. In Naples, Sicily, and Sardinia, especially in country districts, wine is the general drink, except in sea-ports, as Messina, in Sicily. In the order of alcoholic intensity in a fourfold classification Lombardy, Venetia, and Liguria stand in the first class; Piedmont, the Marches, and Emilie in the second; Tuscany, Latium, and Umbria in the third; Sicily, Sardinia, and the province of Naples in the fourth.

Mortality.—Attention is called ²²_{Jan. 3, '94} to some recent fatal cases of acute alcohol poisoning. A man in Sheffield, for a wager, undertook to drink twelve glasses of beer within one hour. After drinking nine glasses in about half an hour, he suddenly became comatose and died. At Birmingham, a grocer's assistant suddenly swallowed a pint of rum. Later, a child was fatally poisoned with some whisky which it had inadvertently drunk. P. H. Fox, ¹⁶_{Feb., '94} illustrating the poisonous effects of fusel-oil (amylic alcohol), records that in Dublin, many years ago, a great fire broke out in a large store, where one of the chief city distilleries had an immense quantity of fresh and immature whisky deposited. The fire occurred at 10 o'clock at night, and attracted immense crowds of spectators. The conflagration attacked the whisky-barrels, which burst, allowing the flaming spirit to run in torrents through the streets. People drank of the spirituous flood, and next morning the hospitals were crowded with dead and dying, all poisoned with the fusel-oil of the fresh, new whisky. He gives an illustration of rapid death arising through excessive alcoholic indulgence in India. During the hot weather of 1884 he was stationed at Hyderabad, when several cases of heat-apoplexy occurred. One poor fellow belonging to the regiment fell sick one afternoon. He was flushed and nervous, with a temperature of 104° F. (40° C.). He said: "I have been a teetotaler all my life and never knew the taste of liquor till yesterday, when my comrades induced me to have some

drink. I drank ale to excess last night and was very ill from its effects. I had more to-day, because I was advised to take a 'hair of the dog that bit me.' But it made me worse and I was obliged to come home sick." He was put to bed, but during the night he became comatose, had convulsions, and died.

Medico-Legal Relations.—The recognition of a disease element in the protean manifestations of intemperance has taken root, and is steadily advancing in public favor. This rapidly-growing acceptance of a morbid origin of an intoxication-mania has brought with it a deep sense of the need for legislative provision for the intemperates who have been impelled to excess by some departure from sound health. The most striking proof of this advance is to be found in the reception by the British Home Secretary of a representative deputation.²
Dec. 9, '98 Norman Kerr, of London, stated that of the 112,000 males and 133,000 females committed annually in the United Kingdom, 50 to 60 per cent. of the males and 80 to 85 per cent. of the females were drunken cases. In cities from 2 to 5 per cent. were persons who had been committed from one hundred to six hundred times. In the name of the British Medical Association Inebriates' Committee, the British Society for the Study of Inebriety, and the Homes for Inebriates Association, he asked, among other things, for amended legislation for power to curatively seclude non-criminal habitual drunkards; for provision for the poor; for therapeutic instead of prison treatment for inebriate, diseased criminals; and for the inclusion of inebriety in opium and other narcotics as well as in alcohol. The Home Secretary promised to frame and bring forward a bill based on the lines of the Report of the Departmental Committee on Inebriates, which included compulsion in certain cases, and discretionary magisterial power to send police-court inebriates to a reformatory or curative institution. The Home Secretary believed that a case for compulsion had been established, and that certain forms of inebriety produced the same condition of irresponsibility as insanity. In a review of legislation for inebriates, an editorial writer²²
Oct. 1, '98 draws attention to the fact that the evolution of this legislation has been the converse of that for lunatics. In the former case the checks were at first wanting, and have been gradually added; in the latter, so many checks have been imposed that many must be removed or altered. Bergeron,¹⁶⁴
Sept. 23, '98 as measures for the reduction

of drunkenness, recommends lessening of the duties on tea, coffee, and wine. The last-named article he claims to be a temperance beverage, as the drinker can obtain alcoholic excitation only by drinking large quantities, whereas he can get the same excitement from even a small quantity of alcoholized drink. He also pleads for the prohibition of the sale of brandy.

Douglas Anderson ²⁰⁸⁶_{Nov., '93} holds that drunkenness is a disease for which no one should be punished, arising as it does from an unhealthy state of body or brain. Baer, of Berlin, ³³⁷_{Oct., '93} says that fully 50 per cent. of all criminals under his care have been inebriates. R. M. Phelps, of Rochester, Minn., ¹⁰⁵_{Oct. 15, '93} suggests, for inebriates, a definite legal and forcible commitment for three, six, or twelve months or more, the duration of confinement growing with the repetition of the offense, the confinement to be correctional rather than penal, except in so far as actual crime is involved.

Relations of Alcohol and Opium to Insurance.—Hingston Fox, of London, ⁷²³_{Dec., '93} speaks of the great part played by alcoholism in damaging the lives of the middle classes, among whom insurance companies do a large business. In 600 cases examined by him as a life-insurance examiner, he had found 46 showing evidence of alcoholism, defining the term as embracing any disturbance to the health. Morning-nausea is a common symptom. In beer-drinking, looseness of the bowels is very common. The tongue is frequently large, thick, and flat, indented at the edges, which are red and swollen. The upper surface is granular to the feel, of a pale whitish-ochre tint, with enlarged papillæ, the interstices filled with pale, adherent epithelium. At the back is a thin coating of yellow fur; behind this the circumvallate papillæ are enlarged and red. Sometimes the tongue has a sodden appearance, as if it had been poulticed, or approximating to the soft, weak, much-fissured tongue of old spirit-drinkers. The fauces and pharynx are dark red, the mucous membrane thickened, the tonsils enlarged, and the faucial pillars swollen. Under the laryngoscope the larynx is seen to be thickened and reddened. In the urine of the 48 cases Fox found albumin distinctly present in 21 cases, doubtful or only fine traces in 13, and absent in 14. If there is evidence to show that the applicant for a policy is taking alcohol, habitually or occasionally, to an extent sufficient to injure his health, there is only one course open,—viz., to advise rejection. The Oriental Life-Assur-

ance Company, which does almost the entire native assurance in India, charges no extra premium to users of opium, and for twenty years not a single claim has been paid for a death attributable to that drug.

Prophylaxis.—Crothers ⁶¹_{Aug 26, '04} states that in the evolution of inebriety insanitary conditions are influential, very marked results in some cases following removal to better sanitation. The use of alcohol covers up conditions of lowered vitality. Bad air and bad ventilation always leave the system debilitated, favor auto-intoxications, and the formation of poisonous elements in the blood and tissues. Alcohol then used brings increased weakness and degeneration, with diminished power of resistance. The alcoholic inebriate, possessed with the impulse to use spirits, manifests simply a symptom of some brain-condition which seeks relief. When drinking he neglects hygienic care, and becomes oblivious of poisoned air, bad food, etc. Breaking up and changing these bad surroundings are always followed by an improvement.

Treatment.—J. Bradford McConnell, of Montreal ³³⁷_{Jan., '04} gives a history of 25 cases of alcoholic mania treated with nitrate of strychnine subcutaneously injected. The dose varied from $\frac{1}{30}$ to $\frac{1}{8}$ grain (0.002 to 0.01 gramme) twice daily for ten days, then once daily for ten days, the highest dose being reached about the third or fourth day and continued to the close of the treatment. This administration is in accord with Spitzka's experiments, that to maintain its action the doses of strychnine must be at first increased; later the interval increased and the doses lessened. The border-line of tolerance was reached, in most cases, when 1 gramme ($15\frac{1}{2}$ minims) was used of a solution containing 0.12 gramme ($1\frac{7}{8}$ grains) of strychnine nitrate to 15 grammes ($3\frac{1}{4}$ fluidrachms) of water,—equal to $\frac{2}{15}$ grain (0.008 gramme). Internally, cinchona, peroxide of hydrogen, and capsicum were frequently prescribed in combination. When sodium bromide failed to procure sleep, paraldehyde always succeeded. In the latter cases, strychnine, in doses of $\frac{1}{20}$ grain (0.003 gramme) with elixir of phosphates and calisaya, was ordered to be taken once or twice daily for four to five weeks after ceasing the injections. There were 14 relapses known in these 25 cases from within one to eleven months. McConnell holds that, though strychnine is useful in restoring temporary health, it does not prevent the possi-

bility of further relapses. J. A. Ward¹⁸⁶_{Dec., '93} gives $\frac{1}{4} \frac{1}{8}$ grain (0.0013 gramme) hypodermatically, gradually increasing the dose till physiological effects declare themselves, the highest dose thus injected being $\frac{1}{16}$ grain (0.004 gramme). At the same time $\frac{1}{6} \frac{1}{4}$ grain (0.001 gramme) of strychnine nitrate is given by the stomach every two hours, together with from $\frac{1}{2} \frac{1}{50}$ to $\frac{1}{5} \frac{1}{100}$ grain (0.00026 to 0.00013 gramme) of atropine sulphate in gentian infusion.

R. M. Phelps, of Rochester, Minn.,¹⁰⁵_{Oct. 10, '93} tried strychnine, with atropine hypodermatically, for the drink-craving, and afterward strychnine alone, with nearly the same results in both experiments. Over one-half of the cases treated had already relapsed. C. C. Edson, of Dixon, Ill.,¹⁷⁶_{Jan., '94} is of opinion that it is essential to have the patient fully under the control of the physician, and he gives erythroxylon coca (drachm—4 grammes—doses of the fluid extract) every hour or oftener. C. H. Hughes,⁹⁸_{Jan., '94} in discussing the successful treatment of inebriety without secrecy, thinks that with the recognition of alcoholism and inebriety as grave diseases, with graver physical and psychical sequelæ, hope has dawned for the drunkard, who is to be cured through the seeking of medical relief. Suitable change of environment and proper medical treatment tend to that renovation of the damaged organism which makes resistance to alcoholic enslavement hopeful. No three weeks' treatment will suffice. There must be psychical assistance and neurotic support, with neurotic and organic reconstruction. A less harmful support to the shattered brain and damaged vital organs must be given, such as is to be found in morphine, opium, strychnine, quinine, cinchona, the valerianates, ammonia, bromide, etc. There must be plenty of liquid in water or milk, prolonged rest, and the removal of the *débris* of the last and previous drinks, and of the interim of organic torpidity and depressed vitality. Saline laxative draughts are essential. Equally necessary is the reconstruction of the injured cerebro-spinal centres, and the other affected organs. Withal there must not be lacking destruction of the drink-crave on physiological principles, which is a pathological perversion of physiological cell-action, and lies in the realm of the cerebral cortex. In the early curative process apomorphia with aurum bichloride is helpful for psychical effect, and sp. frumenti with wine of antimony does good. Finally, if cured, let the patient never trust himself to liquor again. T. D. Crothers, of Hartford,⁸¹_{Dec., '93}

insists on brain-rest in many cases of periodical inebriety, which he holds to be, in many instances, an outcome of mental failure.

The history of an educated and intelligent physician of a neurotic stock is given,³³⁷
Oct., '93 who, after injuries in a railway accident, became a nervous invalid, using spirits continually, and to excess at intervals. He was three months under treatment in a genuine asylum for inebriates, at first suffering from delusions, insomnia, and general prostration. He recovered slowly, retaining delusions of persecution by his brother. He was impatient of restraint and left, restored, to resume practice. Next year he relapsed into continual intoxication. He was attracted by the gold-cure specific, and, after three weeks' treatment, took charge of a branch asylum, lecturing and writing in favor of this secret specific, citing marvelous statistics and pointing to himself as a proof of its efficacy, while condemning asylums which did not use gold-cure specifics. At the expiration of a thirty days' term of imprisonment in Ward's Island, N. Y., for drunkenness, he drank to excess and was found dead in a barn, probably from cerebral hæmorrhage.

A. Guépin⁵⁵
Feb. 10, '94 enforces the necessity, in cases of delirium tremens, of a thorough examination of the patient and his vital organs, including, if possible, an analysis of the urine and frequent records of the temperature. In the graver forms, with violent and continual excitement, hyperpyrexia, and absolute delirium, it is desirable that the patient be put in a padded room. The strait-jacket and other methods of physical restraint are bad, and at times dangerous. In the young, with elastic arteries and sound kidneys, opium can be given freely. It is undesirable to exhibit drugs, like the bromides, or solid preparations, which are slow in action. With older patients, where the vessels are more indurated and inelastic, chloral is less dangerous than opium. In elderly subjects, all narcotics must be given with great circumspection. In the milder cases, in the beginning of what may be called the prodromic symptoms,—which often escape observation,—rest in bed should be ordered, with generous saline draughts, the patient being left without narcotic drugs. After the administration of a purgative, diuretic drinks can be given freely to promote diuresis and profuse perspiration. If this treatment do not assuage the delirious perturbation, the determination of the after-treatment will be greatly aided by this original examination of the patient.

It is stated ²_{Apr.7,'94} that 31 per cent. of the inebriate patients at the Dalrymple Home, in England, have done well after discharge. Griffith ¹⁹²_{Aug., '94} and G. W. Bath, of Ohio, Ill., ⁷⁸⁶_{Aug., '94} treat inebriety with strychnine and atropine hypodermatically. Having found liquor ammoniæ acetatis in acute alcoholism, and strychnine (both by the mouth) in subacute and chronic alcoholism, quite as effectual as the subcutaneous administration, I eschew the latter method. The simpler and safer the remedies used, the more permanent and helpful will be the treatment to the sufferers.

McPhedran, of Toronto, ⁹_{Apr.14,'94} ascribes treatment at a "gold-cure" as the cause of extreme weakness, with almost no HCl in the stomach, and symptoms of belladonna poisoning, in two males received into hospital.

OPIOMANIA.

Louis Fischer, of New York, ⁵⁹_{Feb.17,'94} has found many cases of narcotic symptoms in children, arising from the administration of this or like drugs (such as morphine, paregoric, and laudanum), either in starch enemata, hypodermatically, or in soothing-syrups. A girl 3 years old, who ultimately died, received 2 enemata daily, of 10 drops each, of laudanum. Fischer had seen twenty-two similar cases. Another child, aged 6 years, who also died, was being given 2 tablespoonfuls every hour. The mother of an infant of 11 months was a victim to opium-addiction, and had been given $\frac{1}{2}$ grain (0.03 gramme) of pure extract of opium for a dose. Huchard found persistent albuminuria in ten adult morphine cases, eventually terminating in anæmia. He believes that the albuminuria is caused by specific action on the medullary centres, consecutive to paresis of the renal vasomotor supply, and that anomalies of pressure can produce renal disease. Haig disagrees with the views about albuminuria being associated with low-tension pulse. Diarrhœa was the most prominent symptom, on the withdrawal from opium, in all the cases.

Ringer ²⁰⁸⁷_{Ed.11,p.425} holds that the active principles of opium pass out with the mother's milk, so that a nursling is liable to be thus affected. Emaciation was always noticed in post-mortem examinations. During life the temperature was rarely above 99° F. (37.2° C.). Many of Fischer's cases ended in recovery, which he attributed to the fact that the patients, being children, could not

procure opium of themselves. An analysis^{Nov. 25, '93 to Feb. 17, '94} is given of the opinions of upward of a hundred medical officers and civilians, resident in all parts of India, upon the use of opium. In that country there is a broad distinction between the moderate and excessive use of the drug, the excessive use being rare; 2 to 4 grains (0.13 to 0.26 gramme) a day, twice daily, is a moderate use. Opinion is divided as to whether opium is a prophylactic against malaria, several army-surgeons believing that it is. The evidence does not bear out the assumption that opium is as hurtful in India as in China. Opium was used in India in the sixteenth century. There is no basis for the idea that the moderate use induces excess. There is a consensus of opinion that the habitual use of opium by the natives does not, in any degree, correspond, in injurious consequences, to the results of alcohol consumption; and the belief is almost unanimous that the abandonment of the use of opium would be followed by excess in the use of other deleterious drugs or of alcohol. In India, opium is mostly eaten or drunk; in China, smoked; 50 to 80 grains (3.20 to 5.20 grammes) are often eaten in a day, as a regular practice. Quantities of up to 1 drachm (4 grammes) a day are not considered excessive. Excluding the native States and the Punjaub, the opium-consumers cannot number over 2 per cent. of the population. In India the natives use opium as a means of fitting them for hard work—not as a narcotic, as a rule—and as allaying the pangs of hunger in famine. Infants are given opium up to 3 years of age, and are said to look healthy. The antimalarial virtue is supposed to reside in the narcotine, which has been shown to be a febrifuge, present in larger proportion in Indian than in Chinese opium. Only in Burmah is it rarely used without being abused. Altogether, the great mass of testimony goes to show that opium is seldom used to excess in India; that, used in moderation, it does no harm, physical or moral; and that its effects cannot be compared with those of alcohol.

MORPHINOMANIA.

Passowér³³⁷_{Oct., '93} gives two cases showing the wasting effect of morphine on the female organs. In one female of 29, by whom he was consulted for amenorrhœa, the catamenia re-appeared on the discontinuance of the drug, and ceased on again taking to

morphine. In two years the weight of the patient decreased 16 pounds (8 kilogrammes), the subcutaneous fat disappearing, the vulva and uterus becoming atrophied, the measurement of the latter receding from three and one-tenth inches to one and nine-tenths inches. Atrophy of the submaxillary glands has been observed in dogs subjected to doses of morphine.

J. B. Mattison, of Brooklyn, ⁶¹_{Aug. 4, '94} reports that 70 per cent. of his cases have been medical men, and believes that the wear and tear of their calling, with neuralgia and migraine, are the main causes of this special addiction. He thinks that morphinism is on the wane. Jules Bochart ³_{Sept. 8, '94} also attributes to doctors (and to women) the main share of opium addiction. In his opinion medical men and persons associated with them make up half the total of male *habitués*. Women glory in this habit and boast of it. Men are ashamed of and conceal it. Voisin ²²_{July 4, '94} treats morphinomania with strong coffee four times daily, bread-crumbs rolled in powdered gentian, a stimulating mixture, beef-tea and milk, but avoids the use of morphine. The vomiting and diarrhœa are temporary. Comby ²²_{July 4, '94} effected withdrawal of the drug, in a case where 10 grains (0.65 gramme) a day had been taken, in about nine days: 2 grains (0.13 gramme) of sparteine and 10 grains (0.65 gramme) of caffeine were given. He reports ¹⁴_{June 24, '94} six cases of morphinomania treated by sudden withdrawal of the drug with success. These were not psychopathic, inherited cases, but morphinomaniacs following treatment with morphine.

Erlenmeyer ⁵_{Apr., '94} calls attention to the very plausible hypothesis of Marmé, that morphine in the body, by taking up oxygen, is changed into oxydimorphine, which latter gives rise to symptoms of abstinence. Since these symptoms are not caused by morphine, the use of atropine for their relief is irrational and should be abandoned.

W. Kochs, of Bonn, ¹¹⁶_{Nov., '98} employed subcutaneous injections of atropine as an antidote to morphinism in five cases, diminishing the unpleasant results of abstinence. He says that $\frac{1}{3000}$ grain (0.00022 gramme) of the sulphate should be given at first, the patient being watched for several hours. A second dose may be given, if necessary. I cannot approve of this treatment. In most cases the quantity of the morphine should be slowly diminished, thus reducing the suffering to a minimum.

TOBACCOISM.

Lewin ¹⁰⁰⁶_{Sept., '98} states that the deleterious effects of tobacco are observable after its use in any form,—smoking, chewing, or snuffing. Typical nicotinism occurs, as a rule, after a long-continued use of tobacco, sometimes not until twenty years and more. While many smokers reach old age, many people do not live to old age because they are smokers. In nicotinism the skin is the subject of itching and erythema, the nerves of taste are blunted, an angina granulosa develops in the throat, and anorexia, epigastric fullness and pain, matutinal vomiting, and disturbance of intestinal function are common. There is menstrual disturbance in women, and in female cigar-makers abortion is frequent. Generally sexual power and appetite are impaired, and sometimes impotence occurs. The most frequent pathological effect is disturbed heart-action, palpitation, rapid and intermitting pulse, præcordial anxiety, weakness, faintness, and collapse, with sclerosis of coronary arteries and left ventricular hypertrophy. Cigars and cigarettes produce irritation of the nasal mucous membrane, diminished olfactory sensibility, chronic hyperæmia of the epiglottis and larynx, sometimes even of the trachea and bronchi. Bilateral nicotine-amblyopia is common, with central disturbance of the field of vision,—a central, horizontal, elliptical scotoma for red and green, sometimes also for blue, in a lesser degree. Often there is swelling of the auditory tubes and tympanic congestion, with paresis of the auditory nerves and its consequences,—noises in the ear, etc. Central nervous function is affected. In higher schools non-smokers get on better than smokers, children from 9 to 15 years of age who smoke showing less intelligence, laziness, and a craving for strong drink. Adults are liable to cephalic pressure, insomnia or its converse (sleepiness), melancholy, aversion for work, and dizziness. There may also be ataxic symptoms, parietic weakness of sphincters, trembling, and spasms.

Nicotine-psychoses are said to rarely affect smokers, occurring more commonly in snuffers, and still oftener in chewers. The prodromal stage, which lasts about three months, shows general uneasiness, restlessness, anxiety, sleeplessness, and mental depression of a religious type. After this follow præcordial anxiety and, finally, the psychoses proper, consisting of three stages: 1. Hallucinations of all senses, suicidal tendency, depression of

spirits, attacks of fright with tendency to violence, insomnia. 2. Exhilaration, slight maniacal exaltation, agreeable hallucinations; after from two to four weeks' relaxation, again followed by a maniacal condition. 3. The intervals between exaltation and depression diminish, the patient becoming irritable, but otherwise not alive to his surroundings, perception and attention being lessened. It is claimed that the patient is curable in five or six months if he stop the use of tobacco during the first stage; in a year or so, if during the second stage. After the third stage the disease seems incurable. Withdrawal of the tobacco is an essential part of successful treatment. Potassium iodide, laxatives, and warm baths hasten elimination of the accumulated poison. Subcutaneous injections of ether are employed against the dizziness; pilocarpine for the disturbances of hearing; strychnine, hyoscyamus, biniodide of mercury, pilocarpine, etc., for the amblyopia. W. T. Cathell, of Baltimore, ⁶¹_{Dec. 16, '93} divides tobacco-users into three classes: those whom tobacco does not injure, those whom it injures slightly, and those to whom it is a poison. The pipe might be the exciting cause of cancer of tongue and lips. In the discussion C. Birnie, of Daveytown, Md.; W. N. Welch, and A. Claude, of Annapolis (who at 74 said that he—and his father before him—had chewed tobacco during almost his whole life, and a medical friend at 90 was an inveterate chewer), denied that tobacco caused cancer, and had seen cuts and wounds heal up excellently after the application of tobacco.

Hall, of Texas, ⁴⁵¹_{Apr., '94} holds smoking to be the most noxious form of using the weed. Tobacco is both an arterial and a cardiac poison. He describes the only case of which he has heard of amblyopia from snuff-taking.

THEINISM.

According to James Wood, of Brooklyn, ⁸¹⁴_{Sept. 1, '94} in January, 1894, 100 out of 1000 patients applying for hospital treatment showed symptoms of tea-inebriation. An average analysis yields: theine, 2.8 per cent.; albuminoid principles, 3.5 per cent.; carbohydrate elements, 9 per cent.; tannic acid, 14.2 per cent.; essential oil, 0.75 per cent., and cellulose, 2.3 per cent.; besides wax, resin, extractives, salts, xanthin, hypoxanthin, boheic acid, and apotheine. The essentials are: theine, which affects the nervous system

primarily and the organic secondarily; tannic acid, which affects the digestive apparatus; and the essential oil, which causes tea-intoxication. In the finest Assam (Indian) tea there are two and one-half times as much tannin as in the finest Chinese. The amount of tannin ranges from 7 to 11 per cent. The essential oil is largest in the first infusion, and is soon given off if the tea is not drunk at once; this explains why professional tea-tasters who take it immediately on infusion are liable to headaches. Some persons are injured by two strong cups daily, but Wood has known others to drink fifteen strong cups in a day without damage. Usually 1 ounce ($15\frac{1}{2}$ grammes), daily, containing from 6 to 10 grains (0.39 to 0.65 gramme) of theine, soon produces poisonous symptoms; 69 per cent. of the theinized patients were females. As regards quantity, those not drinking over 2 pints (1 litre) were 54 per cent.; 4 pints (2 litres), 37 per cent.; 10 pints (5 litres), 9 per cent. Strong tea was taken by 77 per cent., ordinary strength by 15 per cent.; strength not known, in 8 per cent. The number of nervous cases was 72 per cent. Constipation occurred in 40 per cent., diarrhœa in 2 per cent., irregular bowels in 15 per cent.; 16 per cent. suffered from general pain, 10 per cent. heart, 9 per cent. back, 6 per cent. side, 7 per cent. chest. Dizziness occurred in 20 per cent., faintness in 8 per cent., gastric and intestinal indigestion in 19 per cent., intestinal catarrh in 8 per cent., dreams in 5 per cent., nightmare in 5 per cent., depression in 10 per cent., despondency in 20 per cent., excitement in 5 per cent., suicide in 3 per cent., headache in 45 per cent., rheumatism in 5 per cent., irregular menses in 12 per cent., palpitation in 19 per cent., muscular tremor in 12 per cent., insomnia in 15 per cent., anæmia in 6 per cent., dyspnœa in 5 per cent. Caffeine and theine are antagonistic in action, and the former is useful in theinism. In Ireland the excessive consumption of tea is reputed to be a causative factor in insanity. Theine and digitalis, both in large doses, cause prostration, muscular tremor, and convulsions, lowering reflex action, inducing nausea, vertigo, and abdominal pains; the drugs are antagonized by opium.

Jonathan Hutchinson ³³⁷_{Oct., '93} describes a case of alarming attacks of dyspnœa, with agonizing pain of epigastrium and lower part of chest, after drinking tea freely at breakfast, in a delicate, nervous man with a suspicion of gouty heredity. Injection of morphine

terminated the angina-like seizures. Norman Kerr ²⁰⁸⁸_{3d ed., '94} cites the case of a female in middle life who took 1 pound (500 grammes) of tea daily.

CANNABINOMANIA.

Thos. Ireland, of British Guiana, ⁹⁸_{Oct., '98} states that the coolie immigrants introduced Indian-hemp intoxication into British Guiana, importing the seeds for cultivation. The drug is used by religious Hindoo fanatics as an excitant to deeds of sacrifice or violence, and was taken by Sepoys, in the Mutiny, to increase their courage. Comparatively few females have given way to this indulgence. Mohammedans are rarely addicted. Wise, of the Dacca Asylum, in 1873, stated that in Indian asylums, on an average, between 30 and 50 per cent. of admissions were due to abuse of Indian hemp, and that at the Cairo Asylum one-third of the admissions were due to this narcotic. In British Guiana fully 30 per cent. of the coolie patients in the Berbice Asylum had been habitual smokers of cannabis. Rich and poor Hindoos alike indulge, bhang being the cheapest form. Water is added to the ground leaves and stalk till a liquid paste is formed, which is strained through a cloth; $\frac{1}{2}$ to 1 drachm (2 to 4 grammes) is mixed with milk and sugar and then drunk. The poor add black pepper. The effects are quiet, pleasant delirium and stupor. Churrus causes excitement and violence. It is the dried, sticky resin extracted from all parts of the plant, especially from the pith within the stalk. It is mostly imported into India from Persia and Afghanistan. The color is greenish black, the taste bitter, and it is smoked with or without tobacco in a cigarette or a hookah over glowing charcoal, after having been rubbed down fine with the hand. Upla, or cowdung-fire, is preferred to charcoal, on which the pill or bolus is placed, and the smoke forcibly drawn through the pipe and then inhaled. One puff sometimes makes the eyes red, four puffs make a moderate smoke, $\frac{1}{2}$ drachm (2 grammes) being sufficient for two or three men. Majoon, a dirty-greenish toffee, is another preparation of cannabis, made from the ground leaves mixed with butter, sugar, and milk, and then baked. About an ounce (30 grammes) is eaten at a time, and this sweetmeat is often used by thugs or thieves as a poison in India. Ganje is made from the dried flower-tops rubbed to a fine powder in the hand, and then smoked in a native clay pipe mixed with tobacco.

DISEASES OF THE UTERUS, TUBES, OVARIES, AND PELVIC TISSUES.

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PHILADELPHIA.

DISEASES OF THE UTERUS.

GENERAL CONSIDERATIONS.

Pelvic Examination.—Howard A. Kelly, of Baltimore,²³ states that the essential points in the diagnosis of inflammatory pelvic disease are discovered by direct examination of the diseased organs through the rectum, vagina, and lower abdomen. The lower bowel should always be freely evacuated before examination is made. If the cervix uteri cannot be easily displaced upward and is immobile and hard, and resisting surfaces are felt laterally to the uterus, the diagnosis of pelvic inflammatory disease may be made. The inferior and posterior surfaces of resisting masses detected through the vagina may be most distinctly felt in an area corresponding to one or both broad ligaments. A peculiar, roofed-in, board-like hardness on one or both sides of the vaginal vaults is often characteristic of pyosalpinx and ovarian abscess. In making examination by the rectum, it is necessary, in order to palpate the abdominal structures clearly, to introduce the fingers up beyond the ampulla and the rectal pouch to the utero-sacral ligaments behind the uterus. Still more exact than the method just described is the bimanual examination under anæsthesia. When the ovary or ovary and tube are bound down by bands of adhesions, there are often alterations in the size of these organs, and the amount of mobility retained may be so great as to prove deceptive. The best method of examining the pelvic structures at our disposal is to have recourse to the trimanual exploration, conducted at the same time by the rectum, vagina, and abdomen, under anæsthesia. The efficiency of this method depends upon the fact that, as the normal uterus can be drawn down to the vaginal outlet without harm, the ovaries and tubes, also becoming

(G-1)

displaced in proportion to the displacement of the uterus, are thus brought within easy touch. To dispense with an assistant, a flat tenaculum, corrugated on one side to prevent slipping through the fingers, is introduced into the vagina and hooked into the anterior lip of the cervix, which is drawn down toward the outlet. If resistance is felt, traction must be discontinued until the cause is ascertained. The instrument is held between the thumb and the third and fourth fingers, while the index finger of the same hand is inserted into the rectum and carried up to the top of the uterus and over the broad ligaments, ovaries, and tubes. If the ovary is large, illy-defined in outline, and more or less fixed, the diagnosis of inflammatory disease may be made at once. The author states that this trimanual method of examination by rectum, vagina, and abdomen is the most accurate of all, aiding in the detection of the slightest irregularity of the uterus and ovaries, as well as the most delicate adhesions. Hunter Robb⁸⁵⁸_{v.13, Nos. 7-9, '94} expresses the opinion that, if a patient present a history with even a suggestion of pelvic disease, a thorough examination should be made as soon as possible; that the great majority of gynæcological cases cannot be satisfactorily examined without the aid of an anæsthetic; and, if the uterus and its appendages cannot be clearly palpated by the ordinary preliminary examination, the surgeon should insist on a second and more thorough examination under anæsthesia. Cases exist in which, even with complete anæsthesia, it is impossible to say positively that the structures are free from disease.

Relation of Gastric to Pelvic Disease.—Meinert³¹⁷_{No. 42, '93} asserts that the majority of gynæcological patients suffer from prolapse of the gastro-intestinal tract. Movable kidney and retroflexion of the uterus may co-exist and give rise to characteristic symptoms; yet these are not the main features of the case, the real trouble being general prolapse of the bowels. It is possible that many phenomena, such as chlorosis, hyperæmia gravidarum, menstrual disorders, etc., are really symptoms of enteroptosis. Many women never feel so well as during the later months of pregnancy, when the prolapsed abdominal viscera are replaced in their normal position by the pressure of the enlarging uterus. The frequent inclination of the gravid organ to the right is due to gastropotosis, and gastric symptoms, regarded by many gynæcologists as hysteroneuroses, are undoubtedly due to this displacement of the stomach.

DISORDERS OF MENSTRUATION.

Relation of Menstruation to Ovulation.—Leopold and Mironoff⁵_{Apr., '94} are led, by their surgical and pathological studies, to the conclusions that menstruation and ovulation usually coincide, though the former often occurs independent of the latter; menstruation is directly dependent upon the presence of the ovaries and the normal development of the endometrium, and not upon the ripening and bursting of the Graafian vesicle; ovulation usually occurs at the time of the monthly flow in consequence of the increased congestion of the pelvic organs at this time, when a typical corpus luteum results; it may occur at other times during the month, though seldom under physiological conditions; sometimes the increased blood-pressure due to the menstrual nîsus may lead to the rupture of the unripe ovisac, when an atypical corpus luteum results; even after the climacteric normal ovisacs may persist and may rupture physiologically, atypical corpora lutea resulting.

Early Menstruation.—Fred W. Thum⁵¹_{Apr., '94} reports a full-term infant, well formed, weighing about 7 pounds ($3\frac{1}{8}$ kilogrammes), born on the 20th of February. On the 22d the nurse noticed a sticky discharge oozing from the vagina, and the following day a small stain of mucus streaked with blood was observed on the linen. On the 24th, on separating the labia, quite a decided discharge— $1\frac{1}{2}$ to 2 drachms (6 to 8 cubic centimetres) of bloody mucus—oozed from the vagina, disappearing on the following day.

Cause of Menstruation.—Martin, of Birmingham,⁴⁹_{Nov. 9, '93} assigns the following reasons for considering menstruation a process directly governed by special nerves which emanate from a special nerve-centre: 1. Its periodicity. The menstrual clock is, so to speak, wound up to go for thirty-three years and strike every lunar month. This, to be rhythmical, must be due to rhythmical changes in a controlling nerve-centre, and is it not also reasonable to attribute the ebb and flow of the menstrual tide to a menstrual nerve-centre? 2. Puberty. The onset is characterized not only by peculiar physical changes, but by an equally-remarkable transformation in the psychical, emotional, and mental line. 3. Monthly period. Each recurring period produces a marked disturbance in the woman's nervous system. In healthy women it induces a state of increased excitability and instability. Lunatics and epileptics

are always worse at that time. It is often a painful process. 4. The menstrual wave. Stephenson has demonstrated that the menstrual life is associated with a well-marked wave of vital energy. This wave attains its maximum during the week preceding the menstruation, and slowly falls, its minimum being reached during the week after. 5. The menopause. Violent mental emotion will occasionally bring on an abrupt premature cessation of the menses. The menopause, naturally or artificially produced, is nearly always a period of marked nervous disturbance. The symptoms of change of life are due to a condition of instability and increased excitability of certain other cerebro-spinal centres directly brought about by the failure of the menstrual function. It is probable that the ovaries, like the liver and the thyroid gland, modify the blood circling through them and add to it some peculiar product of their metabolism. 6. The position of the menstrual centre. This, at present, can only be surmised, but there is reason to believe it will probably be found in the lumbar enlargement of the spinal cord. It has been proved to contain, in the human being, the centres (*a*) for micturition, (*b*) for defecation, and (*c*) for erection and ejaculation.

There is reason, according to this author, to believe that menstruation is a process directly controlled by a special nerve-centre; that this centre is situated in the lumbar part of the spinal cord; that the changes of the uterine mucosa during the period are brought about by catabolic nerves, and during the interval by anabolic nerves; that the menstrual impulses reach the uterus either through the pelvic splanchnics or the ovarian plexus, possibly both; that removal of the uterine appendages arrests menstruation by severing the menstrual nerves.

As a confirmation of Martin's view, that material is being added to the blood during menstruation, A. E. Aust-Lawrence,¹³¹ June, '94 states that pigmentation occurs in amenorrhœa, in pathological conditions as well as in the physiological form, and he questions whether the absence of the catamenia has not more to do with pigmentation than the presence of pregnancy. In other words, the deposits of coloring material are most likely due to the non-elimination of something that ought to be got rid of at a menstrual period, and not so much to the altered state of the blood in pregnancy.

Amenorrhœa.—William Murrell, ²_{Mar. 31, '94} advocates the use of *senecio jacobæa* in functional amenorrhœa, on the grounds that it not only anticipates the period, but also increases the quantity. In many cases it relieves the accompanying pain and not unfrequently the headaches from which some women suffer at such periods. He gives one instance in which the administration of the drug was coincident with relief from profuse leucorrhœa, from which the patient had suffered for many months. Panecki ⁵_{July, '94} advocates the use of a grain (0.065 gramme) of santonin at night, and also potassium permanganate in 1- to 2-grain (0.065 to 0.13 gramme) doses thrice daily. If electricity is used, he advocates the faradic current as best, both poles being introduced into the uterine cavity, and antiseptic precautions observed.

Menorrhagia and Metrorrhagia.—A. R. Simpson, of Edinburgh, ¹⁰⁷⁷_{July 18, '94} states that not unfrequently the climacteric is preceded by two or three periods of excessive flow of blood without any special local pathological change. Women who move from a temperate to a warm climate are likely to have an increase of the flow, British women who go to India often suffering from undue hæmorrhage. Malarial attacks tend to increase the menstrual flow, as do disorders of the spleen, especially in pernicious anæmia. It may be observed also in connection with cases of poison, such as lead poison, or in eruptive fevers, occasionally in the course of scarlet fever, sometimes in the course of typhoid, and is frequently noticed when a patient's health is in an impoverished state, especially after excessive lactation. It may also occur as a result of mental depression, mitral stenosis, or obstruction of some central organ. Rheumatic patients without heart trouble have a tendency to excessive flow, as have also albuminuric subjects. The most common cause is inflammatory change in the endometrium. If the uterus become somewhat enlarged and its cavity expanded, there is a larger area from which the blood escapes and the increased vascularity causes an increased flow. Sometimes it results from what are known as hæmorrhoidal thickenings and fungosities of the mucous membrane, sometimes in the form of mucous polypi. Where there is an excessive hæmorrhage a week after confinement it is generally due to a backward displacement. The displacement itself does not cause the blood to flow, but it interferes with the circulation and keeps up congestion. Backward displacements are

the most likely to produce it. The various uterine neoplasms may cause hæmorrhage either at menstruation or irregularly, those situated beneath or near the serous covering producing the most severe hæmorrhage. Sarcomatous tumors and malignant growths are also sources of hæmorrhage, and may occur as a result of abortion and in subinvolution, not unfrequently from extra-uterine gestation.

Dysmenorrhœa.—Franklin Townsend,¹_{Mar.24,'94} believes that scanty menstruation is most usually the result of malnutrition in both young and middle-aged women, married or single; that the primary seat of this trouble lies in the affection known as chloro-anæmia; that its treatment must be directed in an intelligent manner toward rectifying this condition; and, lastly, that a persistent treatment must be pursued if a permanent cure is to be expected. Mary McKay-Wenck, of Sunbury, Pa.,¹⁰⁹⁸_{Apr.,'94} reports the case of a young woman, 20 years of age, in whom menstruation occurs semiannually. No treatment has had any effect in increasing its frequency.

C. Binz⁸⁰_{Feb.15,'94} advocates the use of salicylate of sodium for dysmenorrhœa and remarks that it is worth trying for painful, late, and insufficient menstruation; but when it seems to be indicated for rheumatism, etc., it must be given with caution if a tendency to miscarriage or premature birth exist, where the patient cannot be kept under observation, or where there is a tendency in the non-pregnant woman to bleeding.

Schwartz⁸⁰_{Aug.15,'94} recommends the gymnastic mechanical treatment of disease introduced by Thure-Brandt for non-inflammatory cases in young women. The movements which he recommends are as follow: (1) traction of the loins; (2) rolling of the thigh; (3) with the patient in the standing position, bending and stretching of the knees; (4) rolling of the feet; (5) separating of the knees and leaning backward. These movements should be performed at home, if possible, daily for one week before menstruation. In well-developed women, not anæmic, who suffer from severe dysmenorrhœa, this treatment is not effective; here, in non-inflammatory cases, viburnum prunifolium gives brilliant results, not to be obtained from any other remedy except morphia. He gives a teaspoonful of the fluid extract three times daily, beginning five to seven days before menstruation. Frank L. James¹⁰⁹_{Apr.,'94} advocates

the use of *aletris farinosa* and gives 10 to 12 grains (0.65 to 0.78 gramme) of the powdered root for an adult.

INFLAMMATORY DISORDERS.

Fissures of the Cervix.—Walter S. Wells, of New York, ¹²⁰ Jan., '94 describes what he calls fissures of the cervix, and which he states may, even in a simple, ulcerating form, cause premature loss of the contents of the impregnated uterus. In women who have had several children it is not uncommon to find the lips of the os divided and serrated. These solutions of continuity enlarge the orifice and thus maintain dilatation. In cases of ulceration, fungous sprouts usually exist and manipulation causes bleeding. In the furrows of fissures are often found linear ulcerations of variable depth, which sometimes extend over considerable surface and then become apparent, but are generally concealed by the depth of the hollows and brought to light only by careful cleansing and unfolding, as by the vaginal speculum. Fungous conditions of the cervix, with ulcerations of greater or less depth, may exist at any stage of gestation.

Hypertrophic Elongation of the Cervix.—Cocheril ²²⁰ May 12, '94 gives the history of a married woman, 35 years of age, who entered the hospital, December 10th, with hypertrophic elongation of the uterus, which was remarkable for its dimensions and singular form. She had had a child nine years before, labor having been normal, but since that time had remained sterile. Six months ago a projection of the vulva was observed, which rapidly increased in size; it was indolent and gave rise to no functional nor other trouble, except interference with the sexual act. Upon examination of the patient a rough mass was found projecting at the vulva, its consistency and aspect being analogous to those of normal tissue, the epithelium being desquamated. It resembled very much the appearance of the glans with the prepuce contracted (see illustrations on next page). This tumor presented an orifice five centimetres from its extremity, larger antero-posteriorly, the length being one and a half centimetres, which was evidently the uterine orifice. The posterior surface of the uterine neck was hypertrophied, but much less so than the anterior. The apparent tumor, therefore, was in reality an hypertrophy of the neck of the uterus, which was twice as large in the anterior as in the posterior portion. Duret performed

amputation, the flaps being sutured by silk-worm gut and catgut. This singular variety of hypertrophy had not originated congeni-

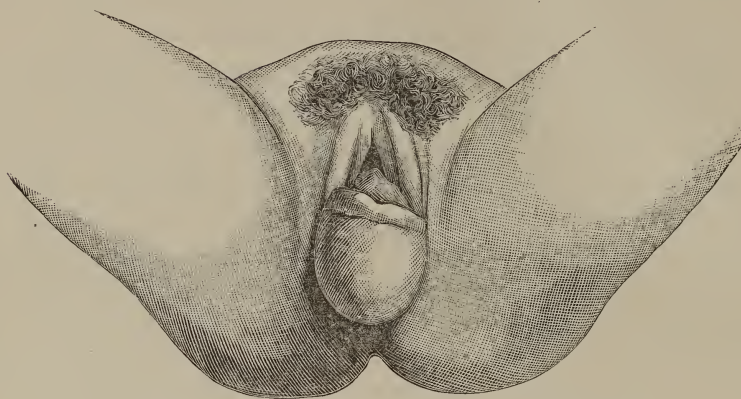


FIG. 1.—HYPERTROPHY OF CERVIX. (COCHERIL.)
Journal de Médecine de Lille.

tally, but had resulted from the traction exercised upon the neck by a small fibroid tumor. In congenital hypertrophy the two portions of the neck are equal.

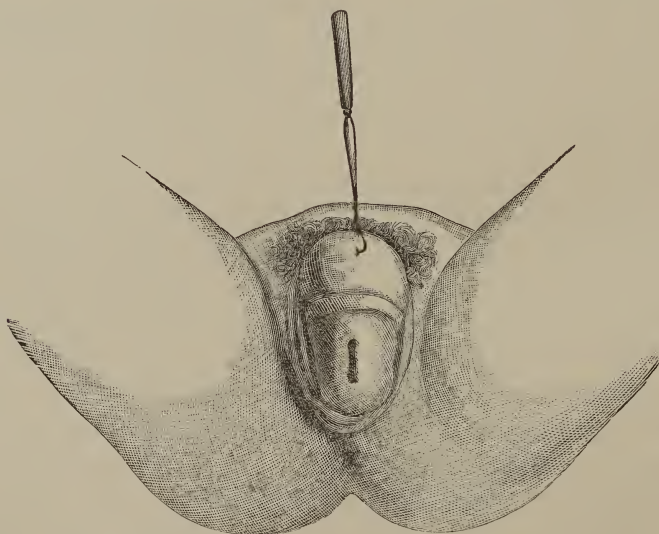
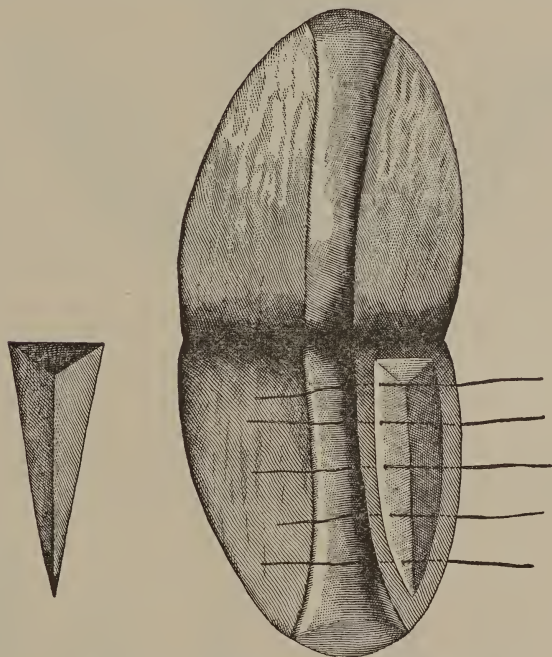


FIG. 2.—HYPERTROPHY OF CERVIX. (COCHERIL.)
Journal de Médecine de Lille.

Stenosis of the Cervix.—Pozzi ⁴⁸_{Dec., '93} describes a new operation for congenital stenosis, consisting of bilateral section of the neck

of the uterus with scissors and the formation of two valves,—one anterior, the other posterior; excision of a prismatic and triangular flap from the lateral parts of each of the lips of the incision (see illustrations), and suture of the external mucous membrane with that of the cervical canal with silver sutures.

Vulliet ³¹⁷_{Jan. 20, '94} performs a plastic operation to widen the stenosed neck of the uterus, by which the cervix is pulled down and back as in anterior colporrhaphy, and with a circular cut the anterior vaginal wall is separated from the insertion at the neck; then the



CONGENITAL STENOSIS OF CERVIX. (POZZI.)

Annales de Gynécologie et d'Obstétrique.

tissue is separated up to the angle of flexion. If the half-circular cut is not sufficient, another incision at right angles to it is made in the anterior vaginal wall. After these flaps are separated the wound is triangular. A catheter is then introduced into the bladder, and if the latter is in the way it is separated from its attachments and pushed up. A large grooved director is then introduced into the uterus by the assistant, the groove up, and fixed; the knife is inserted into the uterine wall, and, being assured that the point of the knife is in the groove of the director,

an incision is made up to *b*, Fig. 1, one to two millimetres above the point where the stenosis ceases. The knife is plunged in

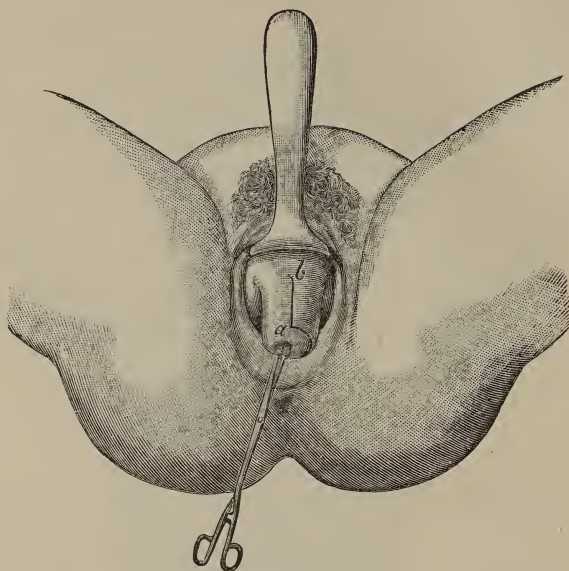


FIG. 1.
STENOSIS OF CERVIX. (VULLIET.)
Centralblatt für Gynäkologie.

again and makes an horizontal or, rather, spiral incision, encircling the neck to the left, ending posteriorly at the os externum, or on

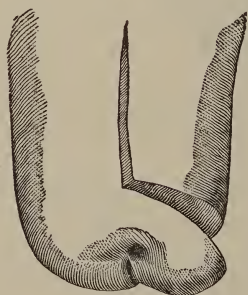


FIG. 2.



FIG. 3.

STENOSIS OF CERVIX. (VULLIET.)
Centralblatt für Gynäkologie.

the opposite side, according to the length of the flap necessary, as in Fig. 2. It is remarkable how easy it is to cut out a long flap in this way. When the flap is separated it has the shape of a long

triangle, the base of which is connected with the remaining part of the neck, through which it is nourished. The point end of the flap is then taken up with forceps, carried to point *b*, and fixed with the suture. The sides of the flap are sutured to the sides of the uterine wall which have been separated by the incision *a* to *b*, and the flap turned one-fourth of a circle. (See Fig. 3.) The T-shaped incision is more advantageous than the half-circle, because it gives a larger operation-field, and because its two ends can be taken up and united by the sutures at *b*, thus closing the anterior parametrium.

Tuberculosis of Cervix.—Emanuel ^{July 14, '94} reports a case of tuberculosis of the cervix which extended to the vagina and did not involve the tubes. The uterus was removed entire through the abdominal incision, but the patient died of shock soon after the operation. The lungs were free from tubercle, but the spleen, liver, kidneys, peritoneum, and mesenteric glands were involved. Emanuel asserts that the different forms of tubercle of the female genital tract depend upon different causes. When the tubes are not affected and the most exposed parts—the vagina and the cervix—are tuberculous, the infection has probably been by coitus. It may be carried by the finger of the physician, the sound, or other instruments.

Defective Drainage After Trachelorrhaphy.—A. J. Nyulasy reports ²⁸⁵_{Feb. 16, '94} a case in which Emmett's operation had been performed seven years previously, and the menopause had taken place a year prior to coming under observation. The patient had been quite well for three years after the operation, when she began to suffer with aching pain and an offensive smell from the vagina, but without discharge. On examination the cervix was found enlarged and œdematous; patches of bloody extravasation, mucous membrane, and fetid pus issued from the external os. A couple of days later, on exposing the cervix to dilate it, no os could be found, all that remained of it being a minute dimple. The sound could not be passed, and, a needle-probe being passed into the dimple, a horrible, fetid pus escaped. The cervix was dilated with Hegar's instruments, and on introducing the finger the cervical canal was found dilated into a cavity, around which the finger could be swept with ease. This cavity was curetted and the entire surface brushed over with strong carbolic acid. Two days afterward the external

os was quite freely incised. The patient made an uninterrupted recovery.

Endometritis.—Winckel ³⁴_{July 31, '94} describes three varieties of endometritis,—the glandular, interstitial, and fungous. The form described by Veit as endometritis decidua is, in fact, a combination of the glandular and interstitial forms, while gonorrhœal endometritis is of the interstitial variety and similar to senile endometritis. The parasitic or aseptic, hypersecretory, and hæmorrhagic are only symptomatic forms of endometritis. Inflammation of the mucous membrane of the uterus may be due to the streptococcus pyogenes, staphylococcus, gonococcus of Neisser, and the bacterium coli commune. The investigations of Laplace have shown that large quantities of various kinds of microbes are found in the epithelium and hypertrophic connective tissue of normal cells. It is unnecessary, therefore, to give special names to the various forms of inflammation, since it is known that infective endometritis occurs in typhus recurrens, in croupous pneumonia, in abdominal typhus, in dysentery, and in acute general peritonitis. Brennecke, Ols-hausen, and Döderlein acknowledge the truth of Gottschalk's statement that certain cases of endometritis may be of nervous origin or may arise from disease of the ovaries. The kind of endometritis can, hence, only be designated from the anatomical alterations of the mucous membrane, and not from their possible cause.

Walter B. Chase, of Brooklyn, ¹⁵⁷_{Jan., '94} divides chronic endometritis into septic, simple, and hæmorrhagic, and advises that internal applications should be employed with great circumspection and never without adequate drainage. He advocates such remedies as iodoform, glycerin, and iodine in equal quantities, and iodoform in cocoa-butter. Among the best, probably, are a few drops of iodine and glycerin in equal quantities. The iodine is antiseptic, stimulating, alterative, and promotes absorption. Another valuable alterative is aristol dissolved in a 10-per-cent. solution of albolene. Regarding the use of instruments, evidence is becoming almost conclusive that the danger is not so much from traumatism as from sepsis. Dilatation tents should never be used, as they involve a great risk of injury to the cervical tissues and of septic infection. Rapid dilatation is better, the author preferring dilatation by some instrument with blades which can be expanded by a screw, as Walter's dilator. Fifteen to thirty minutes should be taken for

the dilatation, so as to give the circular fibre of the cervix time for relaxation. If flexion of the cervix be present, Wiley's dilator is best. Dilatation five-eighths to three-fourths of an inch is sufficient. As the cervix opens the parts should be douched with hot antiseptic solution, carrying this into the uterine cavity before any instrument is introduced. Any abrasion of the cervical tissues should be touched with pure carbolic acid. After dilatation topical applications may be made or the curette used, and the cavity dried, packed, or drained with sterilized 5-per-cent. iodoform gauze. With 10-per-cent. gauze there is risk of iodoform poisoning. This tampon may remain from one to three days. In some cases in which packing is not tolerated a strip of gauze reaching to the fundus may be used to assist drainage. After douching, the cavity may be again packed or alteratives applied, according to indications. As a rule, dilatation and curetting should be avoided in the presence of pustules, except as preliminary to their removal. Intra-uterine treatment should not be instituted unless there is ample room for drainage. The first step in the treatment in all cases should be to render the vagina, cervix, and uterine cavity aseptic. The general health should receive particular attention, both hygienic and therapeutic, accompanying diseased conditions, such as subinvolution, displacements, and uterine inflammations, being previously treated. Laceration of the cervix and injuries of the pelvic floor calling for restoration should also be operated upon before beginning treatment. Rest in the horizontal position, with the foot of the bed elevated from six to eighteen inches, may be of great value. To secure the greatest attainable success time will be required and the patient should be under absolute control, so as to secure perfect detail in all treatment.

Jacobs⁵_{Apr., '94} denies that the menopause exercises a curative influence upon endometritis and its resulting leucorrhœa. After the climacteric it may be accompanied by malodorous discharge, justly awakening suspicion of malignant disease, especially if associated with pain, emaciation, and pelvic disturbance. For this condition he advises curettage.

Metritis.—Monod⁷⁸⁰_{May, '94} advocates, in the treatment of metritis, extensive dilatation of the neck with tents of sterilized laminaria; modification of the disease of the mucous membrane by curettage or various topical applications, a number of which, particularly

ichthyol and permanganate of potash, have been especially efficacious; and prolonged cervical dilatations by the aid of occasional pieces of laminaria, assuring the drainage of the cavity until a definite recovery. J. B. Potter,¹⁰⁷⁷_{Aug. 15, '94} in the treatment of chronic metritis, prevents and relieves congestion by giving purgatives and removing the weight from the abdominal viscera. He does not permit tight stays to be worn, and has the clothing supported by shoulder-braces. He gives alteratives to improve the general condition, followed by tonics, suitable food, and surroundings. He relieves the congestion by local applications of glycerin and iodine and hot douches. He makes use of emollient vaginal injections of borax or weak astringents for leucorrhœa; relieves displacements, especially downward ones, by a properly-applied circular pessary, either vulcanized or soft rubber; and advocates moderate exercise, such as walking, horseback-riding, and the avoidance of standing. Calderini³⁵_{Dec., '93} recommends the use of ichthyol. After vaginal irrigation he applies a 5- to 10-per-cent. solution in glycerin to the neck of the uterus as a tampon, and follows with inunction of the abdomen several times a day with ichthyol in vaselin, 20 to 25 parts in 100. Rapid diminution of pain and abundant vaginal secretion soon take place, with cicatrization of the ulceration. Storer⁹⁹_{Aug. 2, '94} believes that, while ichthyol is by no means the gynecological panacea which some observers have claimed it to be, still it has proved of sufficient value to deserve a very high place in our list of remedies. While its chief action is to relieve pain, it also possesses certain resorbent qualities, in some cases relatively powerful. Its use is not attended with danger nor discomfort, the powdered drug being generally more satisfactory and reliable than solutions.

DISPLACEMENTS.

R. Bell, of Glasgow,²²_{Oct. 25, '93} remarks that a perfectly-healthy uterus will not assume an abnormal position, and that there must be some departure from the health of the organ before its natural rigidity is modified and its position altered, except where the normal supports of the uterus are injured in some way. In the treatment of uterine displacements, therefore, the first point to be considered is whether the surrounding parts which influence mechanically the position of the organ are perfect. If there is any departure from the anatomical integrity, this must be corrected before any effort is

made to rectify the uterus itself. As a rule, the unhealthy condition arises from endometritis or, in some cases, from subinvolution. Even then the lining membrane is primarily at fault, and only through it can the health of the diseased uterus be restored. The condition of the endometrium should be rapidly improved by curetting the entire surface and applying iodized phenol. One or more tampons saturated with glycerin of alum and borax should be introduced to retain the uterus in its position, removing them every third day, and applying fresh ones about once a week. Under such treatment the walls of the uterus will steadily regain their normal tone and should be able of themselves to support the organ in its normal position. During the menses it is advantageous to introduce a pessary, preferably one covered with soft rubber and hinged above and below. Where lacerated perineum exists, operation for its restoration will be necessary.

P. C. Palmer, of Kansas City, ¹⁹_{Oct. 7, '93} never uses a pessary except in prolapse or complicated cases. When leucorrhœa is absent or but slight, he uses antiseptic wool for tampons instead of absorbent cotton. He employs electricity in any form of displacement, in order to shorten and strengthen weakened and unnaturally-lengthy ligaments and cords, to stimulate the healthy action of natural tissues, and to hasten the absorption of unhealthy and diseased parts. He disapproves of suturing for the retention of the uterus, and believes it is better to imitate nature and avoid adhesions.

The necessity of continuing the patient under observation for a length of time and the frequent discomfort from the use of the pessary have led the profession to seek other measures by means of which the discomforts of the displacement may be overcome and the condition itself radically cured. Of these measures the Alexander operation is still frequently performed, and has its able advocates.

Kocher, of Berne, ⁹⁰_{Dec., '93} in performing the Alexander operation, slits up the anterior wall of the inguinal canal so as to gain a clear view of the field of operation, and is thus able to insulate the round ligaments with ease and control the drawing out of the peritoneal diverticulum and treat it according to its condition. The inguinal canal is closed as after the radical operation for hernia. He thinks the uterus is drawn more anterior and higher up, drawing on the ligaments in the direction of the anterior superior iliac spine; con-

sequently he extends the incision parallel to Poupart's ligament as far as the anterior superior iliac spine and stitches the ligaments on the aponeurosis of the external oblique muscles in a given direction. The uterus is fixed during operation by an assistant *per vaginam*.

Henry Parker Newman, of Chicago, ²³_{Aug., '94} believes that the main objections to the operation have been that it is unscientific, since it is not the round, but chiefly the sacro-uterine, ligaments which are at fault in retrodeviations of the uterus. This objection is rendered untenable by the fact that when we draw the fundus forward we restore the normal direction of the uterus with reference to abdominal pressure, although the whole uterus may be a trifle forward of its natural location, and by the fact that after the os is rotated backward the sacro-uterine ligaments tend to retract and regain their supporting functions. Other objections are the difficulty of finding the round ligaments, the possibility of breaking them, and the possibility of their absence. The first objection is disposed of by cutting down upon the inguinal canal directly over the internal ring. The possibility of rupturing the weakened fibres of the ligament, which has been pulled about, frayed, and separated by half an hour of searching among its divergent terminal filaments, is no longer to be feared when his method of operation is employed, the force being brought to bear in a direct line with its intra-abdominal course, and not at an angle, as in the operation at the external ring. That the ligaments are ever absent has been settled in the negative, their muscular structures being continuous with the uterus, and about as likely to be absent as that organ itself. The author makes an incision an inch and a half or more in length, parallel with Poupart's ligament and directly over the canal of Nuck, midway between the spine of the pubes and the anterior superior spinous processes of the ilium, exposing the glistening aponeurosis of the transversalis muscle. The epigastric vein found in the middle of the wound, and picked up with the artery-forceps, may be used as a guide, lying, as it does, directly over the canal of Nuck. Through a single nick in the course of the separated fibres and aponeurosis, the blunt hook may be passed into the canal and the round ligament, which is seen as a white, slightly-flattened, cord-like structure, pulled out quickly. When the ligament has been secured on one side, a similar procedure is

carried out on the other. Drawing upon both ligaments exposes a reflection of the peritoneum surrounding them like a glove-finger. This is pushed back until the ligaments can be drawn well out and the uterus deeply anteverted, thus giving a loop of ligament on either side about four inches in length; this is stitched together, fastening the ligaments firmly into the aponeurosis and walls of the canal by buried animal sutures, care being exercised to avoid strangulation or disturbance of its nutrition. Patients should be kept in bed three weeks or more and cautioned against overstraining for some months. The advantages of this method are: 1. The short time necessary to recognize and secure the ligaments, thus avoiding the danger of prolonged anæsthesia and the liability to wound and destroy its fibres in protracted search. 2. The force used in pulling out the ligaments is brought to bear upon it at its strongest portion, and in a direct line with its intra-abdominal course. This is in strong contrast to the old method of pulling upon its frayed terminal fibres at nearly a right angle with its inner and stronger portion, and over the sharp, resisting surface of the ring. 3. Aided by the sense of sight and seizing the ligament above the inguinal canal, we can feel sure we are drawing upon the abdominal portion of the ligament, and not merely stretching its inguinal section. 4. Having avoided all tearing and bruising of the tissues, with proper attention to aseptic methods, there should always be healing by first intention. Drainage is unnecessary, and after-treatment relatively simplified. 5. Where the ligament is strong and fully developed, as it is in its upper portion, it can be more securely anchored or made fast to the surrounding tissues. 6. Hernia is guarded against by the deep sutures constricting the canal about the internal ring, insuring the firm union where most needed. 7. The intra-abdominal fibres about the external ring are not interfered with in any way, and this effectually prevents those distressing sensations of tension and severe pain which sometimes continue for weeks after when the wound is situated low down, as in the old operation.

J. H. Kellogg, of Battle Creek, Michigan,²⁰⁴⁵₉₄ advocates shortening of the round ligaments, as a result of four hundred operations, and claims that failure to find the ligaments is due to want of skill. The organ must be firmly replaced in its normal position, and an incision less than one inch in length is sufficient for

the purpose. The risk depends entirely upon the amount of care taken in the performance of the operation. He has not lost a single patient, and he considers that the only danger is in the use of the anæsthetic. In nearly fifty cases he has performed the operation under the influence of cocaine, as it only requires from eight to twelve minutes for both ligaments. The author summarizes the advantages for shortening the round ligament as follows: 1. The organ is supported in a natural way; the traction falls upon the parts accustomed to it and able to bear it, being closely connected with the bony walls of the pelvis instead of the yielding structures at the median line. 2. The operation is a safe one, the mortality being nothing. 3. It involves no mutilation, no conspicuous cicatrix, no considerable amount of suffering, and has nothing about it of a frightful or repulsive nature. 4. The time required for operation, when the proper method is employed, is only from five to fifteen minutes, according to the skill and experience of the operator; so that the patient is but a short time under the influence of the anæsthetic, involving very little risk of ill consequences from this cause. He has had less than 5 per cent. of failures in the entire number of patients operated upon.

Arthur Bird¹⁹_{Feb. 3, '94} enumerates the following disadvantages of this procedure: 1. Shortening of the round ligaments does not relieve the condition causing the displacement. It is directed to the relief of the symptom, and not to the cause. 2. It does not restore the uterus to its normal position or place in the pelvis; the obstructed circulation in the pelvis is not relieved, but, on the contrary, is often increased. 3. The shortened ligaments can become stretched or give way from their attachments, allowing the uterus to fall back into its former retroverted position. 4. Great liability to hernia follows the operation.

Another method of procedure which threatens to divide the field with, if not displace, the Alexander operation is that of ventro-fixation. Leith Napier and F. F. Schacht, of Chelsea,²_{Oct. 14, '93} describe intra-peritoneal ventro-fixation as divisible into two varieties: (*a*) indirect; (*b*) direct. Indirect fixation aims at fixing the uterus by means of its ligaments or through the pedicle of an ovarian cyst,—that is, in the course of another operation; direct fixation involves suturing the uterus itself. Direct corporeal uterine fixation is practiced in one of two ways: (1) the lateral; (2) median.

Lateral fixation is a method originally described by Olshausen and two years later by Sanger. Sutures are passed through each side of the uterus at its lateral borders. There is some danger of wounding the epigastric artery and tube. A sort of button-hole aperture is necessarily left between the uterus and the abdominal wall, in which there is some risk of subsequent internal strangulation. Direct median uterine fixation is unquestionably the simplest and most secure method. The authors describe a method of their own which is as follows: 1. Open the abdomen in the ordinary way, for which a short incision will suffice. The larger the uterus, and more especially the greater the number of firm adhesions, the greater the necessity for a long incision. 2. Introduce two fingers within the abdomen, passing them behind the fundus. If adherent, gently separate the adhesions; bring the freed uterus up by two fingers or partly by the fingers, assisted by a small round sponge held on an antiseptic handle. If the uterus is of good size and non-adherent, or but slightly so, it is an easy matter to lift it up on the points of the middle and index fingers. 3. Support the fundus from behind by two fingers and bind a small sponge on the whole. Pass the suture through the uterine wall to the fundus, going tolerably deep into the muscle, but avoiding its whole thickness. Let the assistant now take charge of this temporary controlling suture, and, by pulling on it, drag the freed and normally-replaced uterus upward, thus maintaining it during the subsequent steps of the operation and in the position in which it is to be fixed. Pass two other sutures through the uterus, introducing these differently from the first. With a Hagedorn needle on a holder as for the first suture, pierce the edge of the rectus sheath and fascia and peritoneum on the left side, taking only slight hold of the muscle and a firm hold of the other sutures. Pass it into the uterine wall low down on the corpus uteri,—that is, as near the intra-peritoneal cervix as possible,—employing in-and-out sutures. On reaching the right side of the uterus, again pierce the peritoneum, fascia, and edge of the rectus on the right side of the abdominal incision, and secure the two ends of the thread, for the time being, by catch forceps. Pass a second uterine suture midway between the upper and lower sutures in exactly the same way. If the uterus is heavy, four or even five uterine sutures may be passed. Three are usually sufficient. Now thread the upper uterine suture

on a Hagedorn needle held on a holder or handle, passing the needle through the deeper abdominal layers from within outward, embracing serous, fibrous, and the edges of the muscular layer, as already described with regard to the other uterine threads. Tie the knot externally to the rectus and bury the sutures there. The abdominal sutures should be closely placed, and the skin-edges exactly approximated in order to obtain healing by first intention. Sterilized silk, silk-worm gut, or chromicized catgut may be used for the uterine sutures. Napier introduces the sutures as low down on the anterior surface of the uterus as possible, so as to get the greater portion of it adherent to the abdominal wall. He regards the silk-worm gut as the preferable suture. If chromicized catgut or silk could be depended upon as absolutely aseptic, they would outweigh the merits of the silk-worm gut; the latter, however, is more likely to be cut through.

Czempin⁶⁹_{May 24, '94} advocates ventro-fixation without opening the abdominal cavity for retroflexion of the uterus. The peritoneum is reached, the uterus is pressed up into the wound, and sutures introduced through it in this situation.

Sinclair, of Manchester,⁹⁰_{Apr., '94} advocates the following procedure: Abdominal incision is made the same as for oöphorectomy. After incision is completed the fingers of the left hand are inserted and the fundus uteri sought for. Adhesions are broken up, tubes and ovaries inspected, and, if normal, not interfered with. The fundus uteri is seized exactly in the middle line by a suitable small volsellum forceps, which can be held by an assistant. This is preferable to the introduction of the lever inside the uterus. The vesico-uterine fold is first obliterated by two rows of catgut sutures passed through the parietal peritoneum to the peritoneum of the uterus, near the origin of the broad ligaments. Only the finest and shallowest layer of the peritoneum is included in each suture, the object being to inclose the fold, not to produce considerable adhesions. Higher up, near the origin of the broad ligament, silk-worm gut is passed through the parietal peritoneum, which is first separated for about three-fourths of an inch in its underlying tissues. The needle is then made to pass through a portion of the uterine tissue and return through the parietal peritoneum in the same way as it entered. The uterus and parietal peritoneum are thus tied together, the knot of the silk-worm gut being extra-peri-

toneal. In conclusion, the author states that the various published series of cases show that the element of danger is almost nothing while the operation, efficiently performed, permanently cures the trouble arising from retroflexion of the uterus, complicated with adhesions of inflammatory infection of the tubes and ovaries. When pregnancy occurs after the operation no distress is experi-

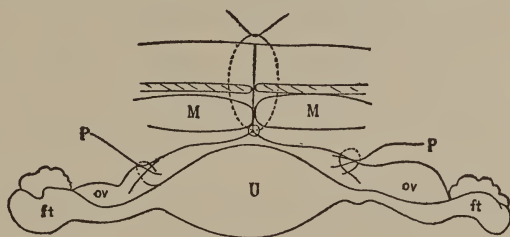


FIG. 1.—SUSPENSION BY THE UTERO-OVARIAN LIGAMENTS. (KELLY.)

Transverse section, showing the uterus (*U*) suspended by the utero-ovarian ligaments to the abdominal wall. *ov*, ovaries, *ft*, Fallopian tube. *P*, peritoneum. *M M*, recti muscles. The silk-worm-gut suture above brings together muscles, fasciæ, and skin.

Johns Hopkins Hospital Reports.

enced by the patient, and no unusual phenomena are observable during pregnancy, parturition, or the puerperal state. Contrary to what might be expected, bladder troubles are quite the exception, being almost certainly avoided by care in operating. In a certain proportion of cases ventral hernia occurs at the site of the

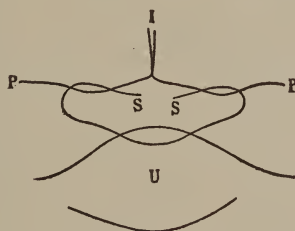


FIG. 2.—SUSPENSION BY THE POSTERIOR SURFACE OF THE CORPUS UTERI. (KELLY.)

The suture (*SS*) passes through the peritoneum (*P*) and subjacent tissue, on either side of the incision (*I*), as well as through the posterior surface of the uterus (*U*) near the fundus. When this suture is drawn up and tied the uterus hugs snugly the anterior abdominal wall in ante flexion.

Johns Hopkins Hospital Reports.

cicatrix. How this is to be prevented is one of the problems of the future.

Kelly, of Baltimore,⁸⁵⁸ states that a retroflexed uterus may be treated by one of two methods. The first consists in passing two ligatures of silk or silk-worm gut on either side through the peritoneum and subjacent tissues, about two centimetres away

from the abdominal incision, parallel to it, and then around each utero-ovarian ligament, respectively, when they are tied, lifting the uterus up snugly in ante flexion, as seen in Fig. 1. The second method consists in passing two silk sutures through the perito-



FIG. 3.—POSITION OF SUTURES PENETRATING THE UTERINE TISSUE. (KELLY.)

Johns Hopkins Hospital Reports.

neum and subperitoneal tissue in a transverse direction, about one and one-half centimetres from the incision. The suture is then carried through a part of the body of the uterus on its posterior surface, near the fundus, and then through the peritoneum, as on the opposite side. The two ends of the suture are brought out of the incision and tied, bringing the uterus and anterior abdomi-



FIG. 4.—SUSPENSION BY THE POSTERIOR SURFACE OF THE FUNDUS UTERI. (KELLY.)

The position of easy ante flexion assumed by the uterus after suspension is due to the yielding of the peritoneum and the subjacent tissue. It is probable that the adhesions stretch in time, although they never yield entirely, as the uterus remains permanently ante flexed.

Johns Hopkins Hospital Reports.

nal wall into close apposition (Figs. 2 and 3). A similar suture passed immediately below the first will be sufficient to keep the uterus permanently in place. The objection to both operations is the abdominal wound, the length of time required in healing,

and the subsequent danger of hernia. To overcome this difficulty the operation of vaginal fixation has been devised.

The relative merits of ventro-fixation and vaginal fixation are discussed by Fritsch, of Bonn, ⁶⁹_{Jan., 4, '94} who does not believe that the former has lost any of its value by the introduction of the latter. It is best in ventro-fixation to suture the uterus with ten or fifteen sutures to the peritoneum, fascia, and recti muscles, the result being lasting, clinically and anatomically. What was generally regarded as the greatest objection to the operation is now looked upon as an advantage, namely, the elevation. Retroflexion, except in a few vaginal, uncomplicated cases, is a relaxation of the uterine ligaments and supports, and is generally accompanied by prolapse. The symptoms arise not from the uterus itself, but from the stretching and pulling of the folds of the peritoneum. The good results of ventro-fixation are not only due to the reposition of the uterus itself and relief from tension on the peritoneum, but also to the replacement of the tubes and ovaries. It is observable that dysmenorrhœa, ovaritis, and similar symptoms disappear after the operation. The author is so satisfied with Olshausen's operation that he recommends it in prolapsus, believing that resection of the vagina with extirpation of the uterus is not as advantageous as decreasing the size of the vagina and performing ventro-fixation. One advantage is not to be overlooked, that the woman retains her genital organs. An operation which preserves an organ is always better than one which sacrifices it. In vaginal fixation the uterus lies deeper than normal, and is robbed of the support of the bladder, while the vagina is not as strong as the abdominal walls. If prolapse occur again, the bladder, in its position above, lies upon it and depresses it farther. In performing the vaginal operation, the author proceeds as follows: The uterus is pulled down and a vaginal incision is made from the cervix outward to near the urethral orifice; the edges of the vagina are freed and the bladder pushed up, according to the method of Mackenrodt. As soon as the peritoneal fold is visible the fundus of the uterus is pulled down with a double tenaculum and anteflexed, care being taken that the whole fundus is held in this position, and the needle passed through the edge of the vagina and fundus. Sutures are passed through the fundus so that a two-centimetre horizontal piece from right to left is in front of the suture, the

latter being so far back that another can be passed through the fundus one-half centimetre in front. The uterus is now fixed, and the reverse side of the vaginal wall attached to the anterior surface of the uterus by six or seven small sutures cut short, the long sutures are knotted, and the edges of the vagina united. A small piece of iodoform gauze is packed in the space formed by the angle of ante flexion, at which point room is left by the passage of the gauze in uniting the edges of the vagina. The uterus is now in a state of spontaneous ante flexion, the fundus being between the bladder and cervix.

Hiram N. Vineberg ⁹⁹¹_{Jan., '94} attributes the idea of anterior vaginal fixation for backward displacements to Säger, and believes that it is a perfectly-safe operation, not difficult to perform; that it fixes the uterus in a more normal position than the other operations in vogue for backward displacements, and that, if unsuccessful, it is not followed by any untoward sequelæ. It is indicated in uncomplicated mobile retroversions, when a pessary for some reason or other cannot be worn; in backward displacements with moderate adhesions which can be easily broken up under narcosis; in the same class of cases with more firm adhesions, but which admit of being distended by a prior course of pelvic massage; in prolapsus of the uterus of the first or second degree with corresponding prolapsus of the vaginal walls; and in retrodisplacements of the uterus complicated with diseased adnexa, not calling for a radical operation. It is contra-indicated in complete prolapsus; in congenital retrodisplacements and very dense adhesions; in cases of retrofixation in which the fundus is very much enlarged and the isthmus atrophied, giving rise to the so-called Hégar sign in the non-gravid uterus; and in cases of retrodisplacements complicated with diseased adnexa to such a degree as to call for total removal.

Condamin ²¹¹_{Oct. 15, '93} advocates the method of hysterorrhaphy as advised by Laroyenne, which he describes as follows: 1 Complete disinfection of the field of operation and of the vagina and dilatation of the cervix are performed. 2. The patient is placed in the Trendelenburg posture and the prolapsed or inverted uterus reduced, held in place by Laroyenne's large hysterometer. An assistant maintains the uterus firmly against the abdominal parietes, which project slightly at the point where it is desired to effect the fixation. 3. Incision is made upon the projection

formed by the elevated uterus for a distance of six or eight centimetres or more. 4. When all the parietal layers are incised, the assistant, who elevates the uterus with the hysterometer, maintains the organ in the open wound while two or three sutures are made. 5. The hysterometer is withdrawn and the anterior uterine surface of the uterus fastened to the peritoneum, and, above all, to the aponeurosis of the linea alba. 6. The skin is sutured. In retroversion with adhesions this procedure facilitates the liberation of the adhesions by elevation of the uterus.

This method is a marked contrast to the vaginal fixation method known as Mackenrodt's operation, in which H. N. Vineberg, of New York, ¹_{Apr. 7, '94} suggests that a vertical incision be made in the anterior wall of the vagina with a knife and the bladder dissected off from the cervix and anterior wall of the uterus until the peritoneum is reached, when the uterus is held forward with a sound and sutures introduced, fixing the organ in its replaced position.

The most frequent form of displacement of the uterus is prolapsus, and for this none of the operations suggested would alone prove curative. In some cases the condition is not such as to justify the submission of the patient to a long-continued operation. For this class of cases Freund ³¹⁷_{No. 47, '93} describes an operation efficacious in cases of marked heart or kidney disease and in weak and debilitated old women. It consists almost completely in closing the vagina by means of four continuous silver-wire sutures, each one encircling the vagina like a puckering-string, one above the other and inserted into the submucosa. The first suture is situated near the cervix, the needle being withdrawn at short intervals, to be re-inserted at the suture-hole of exit, until the vagina is encircled and the needle is withdrawn through the first or primary suture-hole. The uterus is then partially replaced and the suture tightened until the vaginal opening at this point is reduced to the size of the finger. The other sutures are inserted at a distance of one or two fingers' breadth from each other. The last is introduced within the hymen-border. The ordinary needle and silver-wire suture of medium size are used. The operation involves very little pain, the severest being experienced when the last suture is introduced. The advantages are that no anæsthesia is required, the operation is practically bloodless, and no wound is made or tissue

removed. The only contra-indication is extensive ulceration. The author has operated on seven cases in this way, with satisfactory results. Edebohls, of New York, ⁵⁹_{Feb. 10, '94} recommends the use of the silk-worm-gut suture in place of the silver wire in this operation. Terrillon, of Paris, ³¹⁷_{No. 41, '94} in treating uterine prolapse, denudes four to eight longitudinal strips of vaginal mucous membrane about one inch in breadth, separated from each other by half an inch of normal mucous membrane, and extending from the ostium vulvæ to within three-fourths inch of the uterus, and sutures the strips together by means of interrupted silk sutures. This may, if necessary, be supplemented by a perineorrhaphy.

Richelot ²⁴_{Feb. 4, '94} asserts that the first vaginal hysterectomy for prolapsus uteri was done in July, 1886, and the relative facility and extreme safety of the operation for that condition was then demonstrated. He calls attention to the possibility of a secondary prolapse of the vaginal walls after extirpation, and the necessity of considering such a possibility in the preliminary operation. He claims that the operation is indicated when the prolapse accompanies conditions which may prove a motive for the extirpation, such as fibroids and diseases of the appendages. The prolapse is then no disadvantage, but often renders the operation more easy. If the prolapse is slight, and the exuberance and flaccidity of the walls not extreme, colporrhaphy is the treatment *par excellence*. If the uterus be large, or hypertrophy of the neck lead to the belief that the volume and weight of the organ will hinder the reunion or favor relapse, supra-vaginal amputation—not according to the method of Huguier, but such as is now done—should precede the colporrhaphy. If the excessive looseness of the tissues render doubtful the success of a plastic operation at the onset, or after the relapse, the plastic operation can be used as the base of treatment, supplemented by such auxiliary means as an Alexander operation, or, better, hysteropexy.

TUMORS.

Fibroids.—Martin, ⁶¹_{Aug. 11, '94} in the treatment of uterine fibroids, gives the following general conclusions: 1. In hysterectomy we have an operation which is bearing well the test of time; in selected cases, in the hands of trained surgeons, it is the only absolute cure yet demonstrated for a certain class of fibroids. 2. The objections to

hysterectomy are: the long training necessary to safely equip an abdominal surgeon for this most formidable of pelvic operations; the great death-rate in the hands of the tyro; the long prostration, accompanied frequently with nervous symptoms, following otherwise successful operations; its inapplicability to extremely exsanguinated and otherwise reduced patients; and, finally, its inevitable death-rate of at least 5 per cent. in the hands of expert surgeons.

3. Removal of the appendages, as an operation for fibroids, is usually unsatisfactory and should not be performed except as a last resort in a complicated case, where the abdomen has been opened for the purpose of removing the uterus, which, for some reason, has proved impracticable.

4. If the appendages are removed for the purpose of establishing an artificial menopause and of reducing small fibroids by modifying their nutrition, the operator should be sure to include in the ligature the main channel of the ovarian artery.

5. Vaginal ligation of the base of the broad ligament for fibroid of the uterus is an operation still on trial, though from the history of cases it appears to have stood the test.

6. Vaginal ligation of the broad ligament is a minor operation from the stand-point of mortality and of immediate and remote shock to the patient. It can be performed on any patient without risk, in almost any condition of physical prostration or weakness, as long as she is capable of taking an anæsthetic.

7. It succeeds in cutting off one-third more blood to the uterus than does the Battey-Tait operation. Theoretically and practically it immediately checks uterine hæmorrhages, and at once begins the diminution of the myoma by depriving it of its nourishment.

8. The operation of ligation of the broad ligament does not leave an abdominal scar and does not unsex the woman, as does both hysterectomy and the Battey-Tait operation.

9. There are no good reasons why ligation of the broad ligament should not be an early procedure in all conditions of uncomplicated fibroids of the uterus, in which the operation is practicable, even though in a few cases a more radical operation might subsequently be necessary.

10. The operation of vaginal ligation of the broad ligament is practicable in all interstitial or moderately subperitoneal fibroids in which it is possible, by careful dissection, to expose the base of the broad ligament high enough to include in a ligature the uterine artery and its branches.

Cushing, of Boston, Mass., ⁹⁹_{Mar. 29, '94} expresses the opinion that in operative treatment of uterine fibroids electricity is useless and dangerous, and that no method will compare with that of extra-peritoneal treatment of the stump in favorable cases,—*i.e.*, where the abdominal walls are not too thick and the tumor can be lifted out so that a constrictor can be applied around the whole pedicle, including the uterine appendages. The advantages are: the rapidity, the short time the abdomen is open, the entire protection of the intestines from exposure in handling, the absence of shock, and, with proper care, of sloughing of the stump, with little or no suppuration of the wound. For the intra-extra-peritoneal treatment the author suggests that as little of the cervix as possible should be left; it should be dilated, burned, and drained. This is applicable to cases in which it is difficult to apply the former method, owing to thickness of the abdominal walls, rigidity of the pelvic floor, or the pressure of adhesions requiring drainage. The author sees little advantage in leaving any cervix.

E. E. Montgomery, of Philadelphia, ⁶¹_{Aug. 4, '94} in discussing the removal of uterine tumors through the abdomen, remarks that the great advantage of the extra-peritoneal method is that the stump is under observation, and that the occurrence of hæmorrhage can be recognized and readily arrested. It has a number of disadvantages: 1. The tumor may have so distended and involved the cervix as to render difficult the establishment of a pedicle sufficiently long to be treated externally, and the resulting traction may be so great as to cause severe pain and extensive ulceration from the pressure of the pins. 2. It is difficult to keep the external devitalized portion of the stump aseptic and prevent suppuration. 3. With separation of the external portion there is retraction of the stump, leaving an excavation to fill up by granulations, thus prolonging convalescence. 4. With a large stump and later retraction, there must necessarily result a weakened ventrum, greatly increasing the danger of subsequent hernia.

Siredey ²_{Nov. 18, '93} states that in 1890 le Dentu removed a large uterine fibroid from a patient who, in 1892, at the age of 42 years, had a ventral hernia through the cicatrix, although she had worn a belt ever since the operation. Siredey declared that the tumor present was simply a floating kidney, the displacement being bilateral. Early in 1893 violent colicky pains set in, with jaundice

and painful stools, a large, hard, and tender tumor having filled the right side of the abdomen. This tumor was found to be the liver. The case was therefore one of displacement of both kidneys and of the liver following hysterectomy.

Carcinoma.—The importance of the early diagnosis of cancer of the uterus cannot be overestimated. Kelly, of Baltimore, ^{Oct. 14, '93} states that, in order to detect cancer of the cervix at a sufficiently-early date to successfully eradicate the disease, one should see each patient at his office every two or three months after confinement, and there examine and make a careful record of the condition of the pelvic structures, noting accurately what lesions have been produced by delivery. Cervical lesions should be carefully described, particularly the position and depth of the tear and the appearance of the lips. Lacerations require no treatment when the lips are thin, uninfiltrated, and lie together; but when the lips are thick, infiltrated, and everted, and there is cervical catarrh, depletory treatment is indicated, to be followed by repair of the laceration. Every woman who has passed 33 years of age, and has borne a child, should have this examination made without delay by a competent physician, and if the cervical lips do not appear perfectly sound she should be kept under observation and examined at intervals of six to eight months. Every woman over 35 years with a cervical tear should be examined at least once a year for ten years or longer if the appearance of the lacerated area is not perfectly healthy. I. S. Stone, of Washington, ^{Mar., '94} advocates an examination at regular intervals in the following classes of cases: (1) those who fear, or by heredity have reason to fear, cancer, especially about the time of the menopause; (2) those who have sustained a laceration of the cervix and are between 40 and 50 years of age; (3) those who have any of the so-called signs of cancer, such as bleeding after coitus, or especially those having menorrhagia or metrorrhagia, or return of the flow after the menopause. These examinations should be made at intervals of six, twelve, or eighteen months.

Hermann ^{May 12, '94} observes that there are three varieties of cancer, according to the portion of the organ in which the growth begins: 1. Cancer of the vaginal portion,—i.e., between the external os and the junction of the uterus and vagina. 2. Cancer of the cervix, beginning between the os externum and the os internum.

3. Cancer of the body of the uterus, beginning above the os internum. The clinical differences between these three forms of cancer are that cancer of the vaginal portion begins in a part which can be felt and seen, can be diagnosed earlier, and should therefore be more successfully treated. Cancer of the body cannot be recognized so early, but remains limited to the uterus for a long period, and is, therefore, longer amenable to treatment. Cancer of the cervix, if it begin low down and the os externum has been enlarged by childbirth, can be diagnosed early; but if childbirth has not occurred and the disease begins high up in the cervical canal, it is seldom recognized early. It spreads more rapidly beyond the uterus than either of the other forms, and consequently is less amenable to treatment. The first symptoms are usually hæmorrhage and leucorrhœa, pain and wasting supervening later. Hæmorrhage or discharge in a woman who has had children should be a reason for vaginal examination, as it may be the first symptom of cancer. The vaginal portion and the cervix are commonly affected in women who have had children, less so in sterile married women, and rarely in virgins. Cancer of the body attacks virgins as often in proportion as married or parous women. The condition cannot be determined except by examination.

Being a new growth, the part attacked is more or less swollen. In the later stages the destruction effected by the cancer may diminish the size of the part, but in the beginning there is always enlargement. The breaking-down process, which occurs sooner or later, affects all tissues, the ulceration having no anatomical boundary nor any sharp and clear limit. It differs from the ulceration caused by a wound or sloughing in that the latter is a reparative process, tending to fill up breaches of surface; at its edge the granulated cells are being organized into fibrous tissue which contracts and tends to pull the edge down to the level of the surface. The ulceration of cancer is caused by breaking down of tissue at the edge of the ulceration, which is therefore everted, often undermined. The warty growth of commencing cancer is harder and has a sharper edge than the soft, velvety, granular erosion or adenoma which is the only other growth seen on the vaginal portion of the cervix. The granulations of an erosion are separated from one another by sulci, uniform in disposition, and never present any appearance suggestive of sloughing; but

when the cancerous growth is beginning to break down, it looks as if it had been scratched, perforated, or worm-eaten. If the cancer is advanced so as to form a growth comparable to the mushroom or cauliflower, the diagnosis is undoubted. The first evidence of cancer which the senses can detect is an angry, livid-red spot, the surface of which is at first quite smooth. The livid color depends upon the vascularity caused by the new growth and upon its tendency to break down, which leads to minute hæmorrhages into the growth before the breaking down is extensive enough to make a breach of the surface. When this smooth, livid surface is rubbed, it bleeds. A smooth, dark-red spot, bleeding on contact, is therefore very suspicious of cancer. Spiegelberg pointed out that the growth of cancer beneath the mucous membrane alters the consistence of the tissues, making them less pliable, so that when the finger is moved along the affected part the superficial tissues follow the movement imparted to them less easily than in the normal condition. The sensation has been compared to that experienced in passing the finger over wet India rubber. Another sign is that where laceration has occurred, the fissures from tears run from the canal outward, while fissures between the nodules of the cancerous growth are irregular in their course. This, however, is not an early symptom. The microscope is not a satisfactory instrument in diagnosis, and its only use is to confirm suspicion aroused by the evidence of the unaided senses of sight and touch. The microscope must be accepted with reserve for the following reasons: 1. Only the expert familiar with the microscopical appearance of the different parts of the uterus in health and in disease can form any opinion on the question. 2. The judgment of even the expert on a scraping or broken-off bit is of no value unless it be decisively in the affirmative, because cancer may be present and yet a bit scraped or broken off may not be cancerous; hence, before we can be sure that a diseased part is not cancer, sections from every part of it must be examined. 3. There are growths occasionally met with in the uterus, called malignant adenomata, which resemble cancer as to their clinical history, but microscopically present none of its characteristics. Further, in simple erosions in women and in erosions on the cervix uteri of monkeys, Bland Sutton and Gordon Brodie have found structures exactly like those regarded as characteristic of cancer.

Rossa ³¹⁷_{No. 18, '94}; ²_{July 21, '94} gives a description of a case of uterus bicornis, with atresia of the vagina and pyometra, in which cancer of the cervix occurred. The patient died on the fifth day after the operation. The cervix was single.

Cyst.—W. W. Stewart, of Columbus, Ga., ⁵⁹_{Nov. 18, '93} reports a case of muco-dermoid cyst of the uterus in a woman, 31 years of age, who had been married ten years, had four children, and suffered from violent attacks of cramp in the stomach upon exercise. One of these attacks occurred subsequent to the birth of the fourth

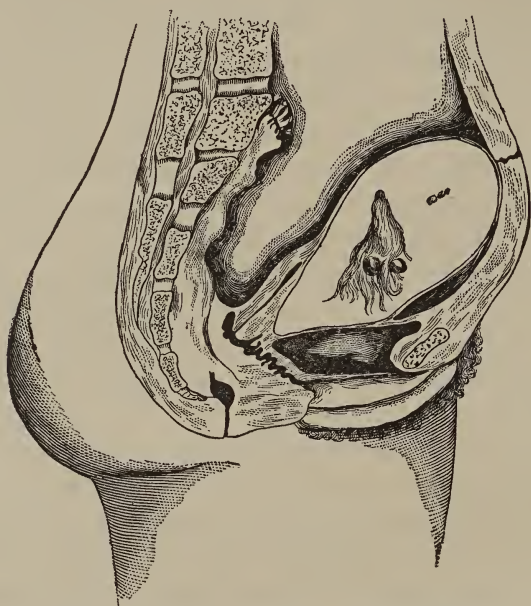


FIG. 1.—CYST OF THE UTERUS. (W.W. STEWART.)

Medical Record.

child. In March, 1893, an attack of typhoid fever, which continued ten weeks, left her much prostrated, and was followed by fever of a septic character, the temperature ranging from 99° to 103° F. (37.2° to 39.5° C.), with profuse night-sweats. The patient noticed an enlargement of the stomach, supposed herself pregnant, and on May 30th had an abortion; hæmorrhage was then controlled by the administration of ergot; it re-appeared every twenty-eight days, and was treated in the same manner until August 21st; on August 25th a soft spot three inches below the umbilicus in the median line was noticed, which had

been the focus of recurring pains since the enlargement of the abdomen had begun. On the 26th it was opened by a small incision through the skin, and discharged a quantity of foul-smelling pus mixed with white flocculi, resembling closely the vernix caseosa. This fistulous opening continued to discharge until she came under Stewart's care. He found the vagina elongated, the cervix drawn backward and upward, but normal in size and consistency. The uterus could not be isolated from the abdominal tumor, which was about the size of a man's head and adherent to the abdominal wall in the median line. The

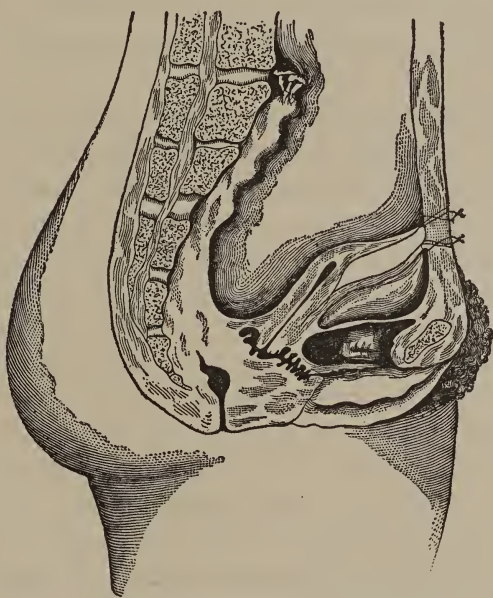


FIG. 2.—CYST OF THE UTERUS. (W. W. STEWART.)
Medical Record.

diagnosis was suppurating mural tumor of the uterus, the character of which could only be determined by exploratory incision. The condition revealed by examination is shown in Fig. 1. He operated on September 11th, making an incision three inches long in the median line, the fistulous tract being at its upper extremity. A dark, reddish body, evidently the distended uterus, was caught up by the tenaculum and sutured to the abdominal walls, to which it was already adherent, and then incised, a quart (litre) of thick, extremely-offensive, flocculent pus gushing out immediately. The finger was introduced into the sac, and a mass of matted hair in

balls with long wisps connecting them was removed. On further investigation three teeth were found imbedded in the left wall of the abscess-cavity. It was evident that the sac was a distended uterine wall and, from the deep implantation of the teeth, probably penetrated through the uterine wall. On account of the highly-septic condition of the sac it was deemed best to let the teeth remain as they were (Fig. 2). The sac was irrigated with boiled water and packed with iodoform gauze, five ounces (155 grammes) of the latter being required to fill it. At the next dressing, two days later, the sac was washed out with boiled water and peroxide of hydrogen (full strength), and again packed with iodoform gauze, but an ounce (31 grammes) being now necessary. The patient recovered.

Intra-ligamentary Tumors.—Emile Lauwers⁵²_{Nov. 25, '93} believes that the removal of intra-ligamentary fibroids is likely to be more dangerous than classical abdominal hysterectomy, owing to the volume of the tumor, the abnormal situation of the pelvic viscera, the absence of a pedicle, and the persistence after operation of a large bloody pouch in the pelvic cellular tissue. The abnormal situation of the pelvic viscera constitutes the gravest complication. Tumors are involved in the folds of the broad ligament, and often insinuate themselves beneath the cæcum on the right or the sigmoid flexure on the left side. The vesico-uterine fold may also be obliterated and the ureters displaced. The latter may run over or be fused into the tumor. In these cases Pozzi advises that the ovaries be removed and the ovarian arteries ligated, and, when this is not practicable, that the capsule be incised and the tumor enucleated. This can sometimes be done with ease, but other times it presents the greatest difficulties. When hæmorrhage is marked, a plastic ligature may be passed beneath the vessels to constrict them. If the ureter pass over the tumor, it must be carefully pushed to one side. If it be cut, it should be turned into the bladder or rectum, or the kidney must be removed.

HYSTERECTOMY.

Winter⁵⁹⁵_{B. 27, H. 1, '94} recommends, in removing the uterus for cancer, that the cancerous tissue be not touched with the finger while operating. Constant irrigation with sublimate 1 to 1000 should be employed, washing away the detached cancerous masses so that

they shall not touch healthy raw surfaces. If possible, tearing or breaking down of the neoplasm should be avoided, but, if this be done, the surface should be touched with the cautery. It is better to curette and cauterize after the radical operation than a few days before, since infection or localized peritonitis may be caused by a preliminary curetting, thus complicating or diminishing the benefits of the radical operation.

It is now generally recognized that when malignant disease is diagnosed, the operation which removes the greatest amount of tissue affords the greatest immunity against relapse. The operation may be done through either the vagina or the abdomen, or by what is known as the combined method. Engelmann²³_{Feb., '94} observes that the vaginal method should take the place of (1) hysterectomy proper, for malignant disease of the uterus, whether carcinomatous, sarcomatous, or adenomatous; for benign tumors, fibromata, or myomata not extending above the navel; for painful metritis or hæmorrhagic metritis resisting treatment; for otherwise incurable cases of prolapse or inversion; (2) hysterectomy for bilateral suppurating disease of the appendages, with accompanying disease of the uterus; (3) all forms of pelvic suppuration and inflammatory deposits; (4) removal of the diseased appendages of one side, only advocated and practiced by Jacobs; (5) for minor operations breaking up adhesions, replacing and fixation of the uterus, and for purposes of examination.

Chaput²⁴_{Feb. 11, '94} asserts that vaginal hysterectomy is one of the many conquests of modern surgery. Some progress may yet be made in methods for abridging certain operations which still require two or three hours for their performance, particularly in case of large fibroids or pyosalpinx. The mortality varies, according to the operator and the nature of the operation, from 5 to 25 per cent., and the most frequent causes of death are hæmorrhage and septicæmia. The former can be controlled by vaginal packing with gauze.

Landau⁵_{Feb., '94} reports seventy-one cases of vaginal extirpation of the uterus in which clamps were used instead of ligatures. Where the uterus is perfectly movable it is anteфлекed. After incising the vesico-uterine fold of the peritoneum and drawing it down forcibly so that the finger can be hooked over the left broad ligament, the latter is then secured with one or two clamps and divided, when it

is an easy matter to clamp the ligament on the right side. A gauze tent is pushed up into the opening and the operation is concluded. If the uterus is fixed by perimetric indurations the organ is drawn forcibly downward and the broad ligaments clamped in sections. In complicated cases, when there is extreme fixation, Péan's method of removal piecemeal is employed. There is no more danger of sepsis with clamps than with the ligature.

Eastman, of Indianapolis, ⁷⁷⁹_{Sept., '98} advocates a new method of suprapubic hysterectomy, in which an incision is made through the abdominal wall to the umbilicus and the tumor turned upward; the broad ligaments are clamped and ligated with cobblers' stitch and separated with the cautery, the pedicle being clamped with Eastman's large, temporary clamp. An elastic ligature is thrown around the pedicle nearly as low down as the vaginal attachment, and the pedicle severed between the clamp and the ligature, dissecting off the peritoneum and turning it down as we would the skin-flap in an amputation. Before dealing with the muscles and blood-vessels the mass is secured with an elastic ligature. A conical-shaped piece of tissue is cut out of the stump, the apex pointing toward the os, the base directed upward and outward toward the serous membrane. A cautery-iron at blue heat is passed into the cervical canal from above outward, for the purpose of destroying the mucous membrane and of draining the interior of the stump. By means of dressing-forceps a rubber tube as large as the little finger is dragged up from the vagina to within half an inch of the free peritoneal surface. The muscular tissue of the stump is constricted by a sort of cobblers' stitch, which does not include the peritoneal flaps, but keeps three-fourths inch from the peritoneal margin. The constriction of the muscular tissue by the cobblers' stitch brings every part of the muscular tissue in close proximity to the end of the rubber drainage-tube. The peritoneal flaps are brought together by Lembert sutures, the cavity closed, and a glass tube carried down into Douglas's *cul-de-sac*. The abdominal wound is closed with silk sutures. Marcy performs a similar operation, except that he uses buried sutures of kangaroo tendon. Kelly has also operated in a similar manner. Baer ligates the uterine arteries through the broad ligaments, but makes no attempt to drain the sac or close the pocket which must inevitably exist. Nodular masses low down in the cervix may

obscure the arteries, and an abnormally-enlarged arterial twig may be necessarily ligated in the pericervical tissue. The ligation of the artery at a distance from the uterus endangers the ureters. In total extirpation of the uterus the greatest danger is from the possibility of vaginal infection, notwithstanding the fact that every precaution may have been exercised to render the canal aseptic. Manipulation of the tumor may cause it to eject a quantity of the poisonous material through the cervix into the vagina, which may come in contact with the finger or ligature while stitching around the cervix. This may be avoided by packing the cervix with iodoform gauze and inclosing the os with a suture before the abdomen is opened. The author recommends vaginal drainage by means of a glass tube, and in the after-treatment the use of preparations of *nux vomica*, in order to decrease the accumulation of gas in the intestinal tract. His conclusions are: that in treating subserous tumors, where a pedicle containing a little muscular tissue can be made above the uterus, leaving the ovaries and tubes undisturbed, the pedicle may be dropped as in ovariectomy; but where a pedicle contains so much muscular tissue that ligatures cannot be encapsulated, but may be cast off, it is bad surgery to leave such a pedicle within the peritoneal cavity; where the neck of the uterus remains small; the abdomen not too fat, and the ovaries and tubes have been tied, the pedicle may be fastened in the lower angle of the wound with satisfactory results; the intrapelvic method just described, and which he first used in 1887, or some of its modifications by Marcy, Kelly, Baer, and others, will, in the hands of expert operators, be a safe method; where the neck of the uterus is so deformed by nodular growths that it is inexpedient to make a pedicle out of the same, where cavities from which nodular masses have been enucleated, or pus-cavities would be drained into the vagina, or where the abdomen is very fat.

A method of combined abdominal and vaginal hysterectomy is described by Morris H. Richardson, of Boston, ⁹⁹ for cancer of the cervix. This author states that the advantages of the vaginal method are that there is less liability to peritoneal contamination, and more intelligent and thorough dissection of the local disease can be made. Its chief objection is the difficulty in controlling hæmorrhage. The advantages of the abdominal method are: that

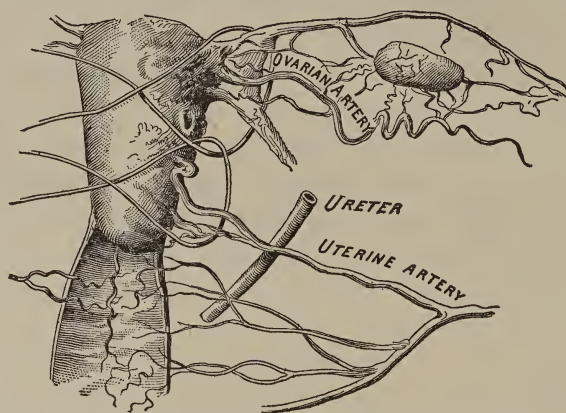
it enables the operator to make a conclusive investigation as to the disease itself, its local extent, and its possible remote metastasis; that the broad ligaments may be rapidly and safely tied and cut; that the ureters may be easily isolated and kept to one side; and that hæmorrhage may be controlled. Its chief disadvantage is the impossibility of thorough dissection and removal of the cervical portion of the disease. The superiority of the combined method advocated by him is seen first in the intelligent and thorough dissection both of the local disease and of the broad ligaments, in the certainty by which hæmorrhage may be prevented, the ureters protected, and in time saved.

Polk⁹⁹¹_{Dec., '93} advocates the removal of the uterus in all cases in which it is necessary to remove the tubes. Krug⁵_{June, '94} also advocates hysterectomy in bilateral disease of the appendages, for the following reasons: The uterus without the adnexa is a useless organ, and devoid of physiological function. It is not innocuous, but, on the contrary, a positively diseased and, therefore, harmful organ. Histologically, the tubes are but parts of the uterus, and their removal is partial amputation of the uterus; therefore, why should we not go a step farther and remove the rest of the diseased organ? Is it conceivable—clinically, is it a fact—that those projections of uterine tissue which we call the tubes are *alone* diseased, and not the rest of the uterus? Leaving the rest of the uterus merely invites future infection. Careful observation and questioning have elicited the fact that the artificial menopause is much easier for the woman who has had her uterus removed, whether for cancer, for fibroids, or in disease of the adnexa for which the tubes alone were removed. The explanation of this is that in extirpation of the uterus the great mass of ganglionic tissue in the organ is also removed.

Edebohls, of New York, ²⁷_{v.3, No.1, '93} advocates extirpation under the following exceptional indications: (1) when the uterus is so large and heavy that it cannot be reduced to the approximate and normal size and weight by amputation of the cervix; (2) when the uterus presents either positive evidence or strong suspicion of malignant disease; (3) when the appendages are so diseased that the condition of the ovaries and tubes calls for their removal, apart from other conditions. He advocates plastic operation on the vagina and ventro-fixation of the uterus. A so-called method of combined

hysterectomy is advocated by Rutherford Morison, ³²_{Aug., '94}, who reports nine cases of extirpation of the uterus for cancer, and advises, in all cases in which the uterus cannot be readily drawn down, that the cervix be removed through the vagina and the body of the uterus through the abdominal cavity. This method allows of a more thorough examination of the condition of the broad ligaments and of the lumbar and pelvic glands, before resorting to total extirpation of the uterus, than is possible from the vagina. The parts are fully exposed, and in a good light,—perhaps the most important aid to successful result. It lessens the chances of peritoneal sepsis,—the greatest risk of the operation. His method of procedure in the vaginal operation is to have the vagina, vulva, and surrounding parts thoroughly scrubbed with soft soap and hot water, then douched with 1 to 20 carbolic-acid solution followed by 1 to 60. The vulvar orifice is surrounded by towels wrung out of a strong antiseptic. The cervix is gripped by volsellum, drawn down, and an examination of the broad ligaments made through the vagina and rectum, the position of the bladder being ascertained. Any ulcerated, fungating, or sloughing surface is thoroughly scraped with a sharp spoon and the whole area again carefully cleansed with abundant carbolic douching. Having fixed the cervix firmly in good forceps, a circular incision is made with a knife completely around it, through the whole depth of the vaginal mucous membrane, and, if possible, half an inch from the diseased surface, taking special care to avoid the bladder in front, where the incision must reach fairly down to the uterine tissue. The cut edges of the vagina are picked up with hæmostatic forceps to right and left anteriorly and to right and left posteriorly, four in all being used. The two anterior forceps are intrusted to one assistant, and the volsellum fixing the cervix to another; while the operator, working close to the uterus, separates its anterior surface by finger and scissors until the peritoneum is reached. This may be opened by scissors, after being caught and held by the clipped forceps, or with sinus forceps, pushing them through closed and withdrawing them opened, when, in either case, the hole is enlarged by tearing its sides apart with the fingers. The posterior surface of the uterus is similarly dealt with, when that organ will be held with broad ligaments only. These, being now well defined, are seized at their lower part by strong forceps within half an inch

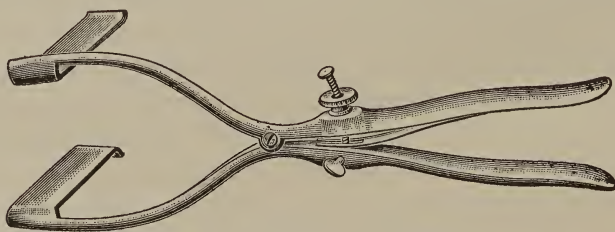
from the uterus, and divided with scissors on the uterine side. When the lower portion is so divided, the uterus is drawn down and a further portion of the broad ligament on each side is secured in forceps and divided. By a continuation of the process the top broad ligament is reached and the now detached uterus removed.



OVARIAN AND UTERINE ARTERIES. (CLEVELAND.)

Medical Record.

The operation is completed by removing the clips attached to the vaginal mucous membrane, sponging and carefully examining the cut edges for any bleeding points, and introducing a thick strip of iodoform gauze through the centre of the forceps, the upper end of the gauze reaching into the peritoneal cavity, the



BILATERAL RETRACTOR. (CLEVELAND.)

Medical Record.

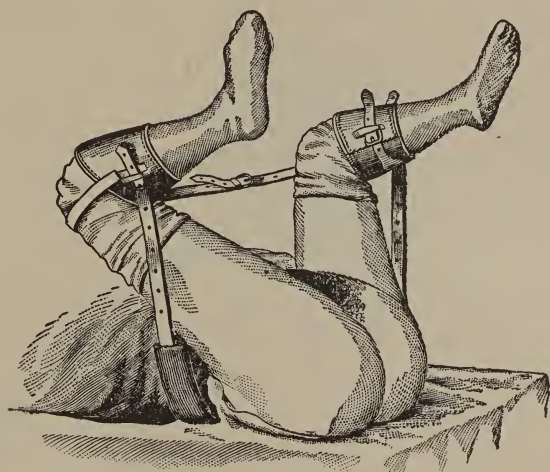
lower end being cut short at the vulva. When all is finished the projecting handles of the forceps and the vulva are covered with a dressing of corrosive wool.

Clement Cleveland⁵⁹_{June 23, '94} discusses the subject of modifications in the technique of vaginal hysterectomy. The accompanying diagram gives the position of the ovarian and uterine arteries, the

relative position of the ureter, and the proper position of the ligaments. A pair of bilateral retractors, devised by him, are also here illustrated.

The number of assistants necessary may be reduced by the use of the Bissell crutch, as seen in following cut.

In order to include the peritoneum beneath the wire around the stump in supra-vaginal hysterectomy, John W. Taylor, of Birmingham, ²²_{Jan. 3, '94} advocates operating as follows: Open the abdomen in the middle line; disengage the bulk of the tumor from the peritoneal cavity and draw it outside in the usual way. After attending to adhesions, examine the position of the appendages, bladder,

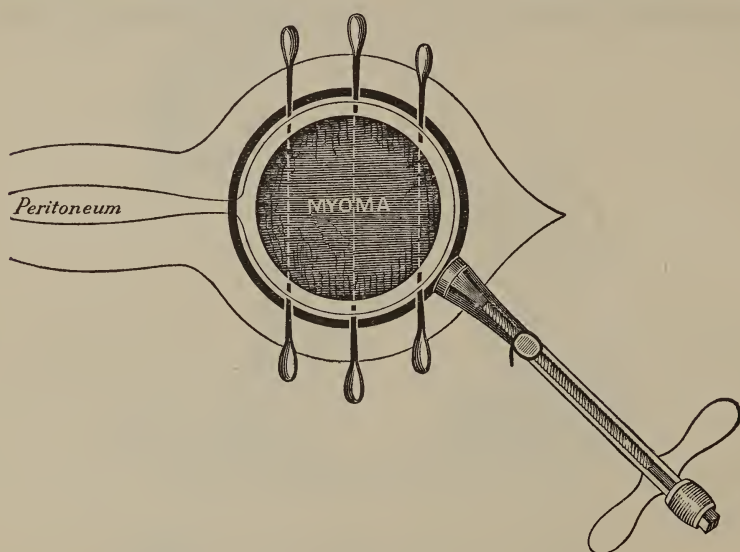


THE BISSELL CRUTCH APPLIED. (CLEVELAND.)
Medical Record.

and rectum, and separate by an incision the uterine attachments of the broad ligaments, between double ligatures. Pass transfixion pins through the peritoneum on the right side of the incision, then through the base of the pedicle of the tumor, and finally through the peritoneum on the left side of the incision, using two or three of these pins, according to the size of the stump. The ends rest upon the skin-surface, but the pin does not transfix any portion of the incision edge except the peritoneum. Put on a clamp immediately below the pins. Catch together the opposing edges of the peritoneum immediately above and below the stump by forceps, including the points of these in the loop of wire. Thus arranged, the parietal peritoneum is caught up by the wire of the

clamp all around the pedicle of the tumor. Tighten the clamp, the whole of the wire being strictly extra-peritoneal, compressing the pedicle of the tumor through a single layer of peritoneum throughout the whole of its course. Cut off the tumor; carefully cleanse the abdomen and pelvis and the open part of the incision above the stump by sponges; close the incision; trim the stump and treat it with solid perchloride of iron and iodoform.

The advisability of vaginal hysterectomy may be justly questioned in cases where there is much infiltration or where there is reason to expect gland involvement. For these classes of cases



SUPRA-VAGINAL HYSTERECTOMY. (TAYLOR.)

Sketch of stump with pins and wire of "serre-nœud" in position (diagrammatic). Three pins are depicted in the illustration; two are usually quite sufficient.

Medical Press and Circular.

Karl Schuchardt, of Stettin, ³³⁶_{Dec. 23, 1903} advocates Hochenegg's method of utilizing the Kraske operation for extirpation of the rectum. He states that by this method we can remove uteri so bound by adhesions and cancerous infiltration as to make vaginal hysterectomy impossible and, when the broad ligament is involved, even laparotomy inadvisable. This method not only enlarges the field of operation, but opens a new way for the removal of the uterus and its appendages. Vaginal hysterectomy by the method of ligating the broad ligaments step by step or by the use of clamps has something unsurgical about it. The sacral method permits

the operator to see what he is doing; to ligate vessels and separate good from bad tissue. It is apparent that further progress in the removal of carcinomatous uteri can only be made when we operate as we do for cancer in other parts of the body. No surgeon would think of removing a carcinomatous breast without ascertaining the condition and removing the enlarged glands of the corresponding axilla. This is impossible with the present method of procedure through the vagina, as the glands of the parametrium cannot always be felt and can never be seen during the operation. The sacral method, however, lays these parts open. Its disadvantages are: the increased danger from the removal of part of the coccyx and part of the sacrum, and sometimes necrosis of the remaining portion, as well as a large wound which is often tamponed and closed secondarily, and the long time required for healing. Zuckerkandl⁸_{No.14,'89} has shown, from an anatomical stand-point, that it is unnecessary to remove part of the sacrum or the coccyx to reach the uterus or upper part of the rectum from above. He places the patient in the right lateral position, opens the left side by a skin incision, beginning at the iliac tuberosity and extending downward, along the edge of the sacrum in the form of a bow, toward the region of the ischio-rectal cavity, ending about midway between the rectum and the cornu of the coccyx. He removes the large gluteus muscle, the tuberosity of the sacrum and the spinoza, sacral ligaments, coccygeus muscle, and the posterior part of the levator, and severs their connection with the sacrum and coccyx. This brings to view the whole extra-peritoneal part of the rectum. By pressing toward Douglas's sac, which is easy when the wound is large, after cutting the peritoneum, the upper part of the rectum, the sigmoid flexure, and the uterus, with its adnexa, can be brought into view. The chief objection to the above procedure is the removal of the sacrum, which, according to Wolfler,⁸_{No.15,'89} is unnecessary. The latter operates as follows: The patient lying on the left, the incision is begun on the right side of the sacrum, somewhat above and one-half inch external to the junction of the sacrum and coccyx, and extends in the form of a weak bow whose concavity is toward the right tuberosity, downward along the rectum, in the perineum, to a point which corresponds to the lower commissure of the vulva. After cutting through the skin, the upper part of the wound reaches the end of the gluteus major

and beneath this the sacro-sciatic ligament; the lower part, the ischio-rectal space and transverse inferior hæmorrhoidal vein. The gluteus major muscle is severed at its attachment to the sacrum and coccyx and the median portion of it removed with the coccyx. After cutting through the greater and lesser sacro-sciatic ligaments, the levator ani is cut, when the right tuber ischii is encountered and the plainly-seen rectum can be separated from the vagina. In this way the uterus, made immovable by its carcinomatous infiltration, and the parametrium can be extirpated without removing any bony part or cutting through the spinous ligament. The patient is placed in the lithotomy position, pelvis raised, and an incision, mostly sagittal, with its convexity outward, is begun about the junction of the middle with the posterior third of the labia majora of that side corresponding with the infiltrated parametrium. It extends in a slight arch to the sacrum, an inch distant from the anal opening. The wound is deepened only in the region of the fat-tissue or the cavum of the ischio-rectal space. From the inner side of the sacro-rectal space the lateral wall of the vagina is reached and is incised from below up to the uterus, which gives a large view of all the concerned organs and allows the uterus and all the cancerous glands and nodules of the corresponding parametrium to be thoroughly removed.

In cases in which the entire removal of the uterus may be undesirable or the patient may decline operation, Robinson, of Chicago, ¹_{Nov. 4, '98} advocates a new method, that of opening the abdomen and ligating the ovarian artery, with or without tubal and ovarian removal; ligating the uterine artery, which courses along the sides of the body of the uterus for half or two-thirds its length from the fundus to the cervix. The object is to induce uterine atrophy and avoid the danger incident to removal of uterine myoma. The mortality of abdominal hysterectomy for uterine myoma is still very high in the most skilled hands, and appalling in the hands of amateur operators. In this operation the mortality over tubal removal will scarcely be increased by the additional time and manipulation necessary to ligate the uterine artery coursing along the body of the uterus. The author uses a well-curved aneurism-needle in performing the operation, thus avoiding the sharp-pointed needle, which might lacerate the vein or artery, which can be felt with the thumb and finger beating close to the uterus. If it be

found difficult to secure the corporeal uterine artery with the aneurism-needle, a long, sharp, curved-handled needle may be employed, which, to be doubly sure, should be pushed through a part of the uterine substance.

Martin, of Chicago, ⁷⁷⁹_{Jan., '94} advocates the following procedure: The patient is anæsthetized and placed on the operating-table in an exaggerated lithotomy position; a short vaginal retractor is applied above and below to expose the cervix, which is transfixed with a strong silk ligature (Fig. 1). Before tying this ligature a piece of gauze is packed into the cervix to absorb any secretion from the uterine canal, and the ligature tied over it to retain it. The uterus is drawn down, putting the broad ligaments on the stretch and to one side, so as to expose the left vaginal vault. The mucous membrane of the vagina at the utero-vaginal fold on the left side is caught with a tenaculum and incised with a pair of curved scissors. One blade is then entered and a curved incision, one and one-half to two inches long, made over the broad ligament and at right angles to it. By means of the index fingers of the two hands the vaginal tissue is separated from the broad ligaments, in front from the bladder, for a height of two inches, and laterally for nearly the same distance, two fingers being used for this purpose (Fig. 2). By freeing the bladder in this way the danger of wounding that organ is avoided and, pushing the separation laterally, the ureter is forced out of reach. The broad

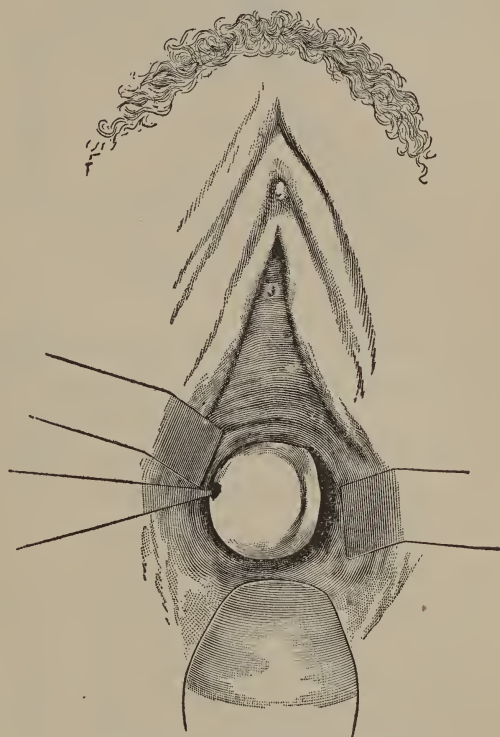


FIG. 1.—UTERINE FIBROIDS. (MARTIN.)
North American Practitioner.

ligament is then carefully separated posteriorly to the same height as in front without penetrating the peritoneum. By passing one finger behind, the other in front, the whole base of the broad ligament, representing two-thirds of its width, is grasped (Fig. 3)



FIG. 2.—UTERINE FIBROIDS. (MARTIN.)

North American Practitioner.

for a distance of an inch to one and one-half from the uterus, the throbbing of the main trunk of the uterine artery and several branches being easily felt. A pedicle curved needle, threaded with No. 12 braided silk, is guided with the index finger of left hand behind the broad ligament, well up beyond all pulsa-

ting vessels; next, with the same index finger, the point of the instrument is made to penetrate through the broad ligament (Fig. 4). The ligature is drawn through, the needle removed, and the base of the broad ligament firmly tied an inch or more from the uterus. The ligature is cut short, leaving it to retract and bury itself in the tissue of the ligament. The opposite side is treated in the same manner, the vagina well irrigated with bichloride solution, and the vaginal incisions accurately approximated with catgut, completely burying the silk. Fig. 5 shows the completed operation. The handling-string in the cervix is removed and the vagina packed with iodoform gauze. The after-treatment is very simple, consisting in the removal of the gauze on the third or fourth day, followed by antiseptic douches. The vaginal wound should be perfectly healed at the end of the week. The author gives a report of six cases, and states that the opera-



FIG. 3.—UTERINE FIBROIDS. (MARTIN.)

North American Practitioner.

tion is a minor one from the stand-point of mortality, in competent hands involving no more danger than from the operation for lacerated cervix. Its effect upon a bleeding fibroid of the uterus is prompt and efficient, cutting off far more blood from the hypertrophied uterus than does the more formidable Battey-Tait operation, and eradicating more effectually a large bulk of the nerve-supply, upon which every organ must depend for its nutrition. It also, while exerting greater influence on the blood- and nerve- supply, preserves to the woman—which is oftentimes most desirable—her ovaries and other organs of reproduction.

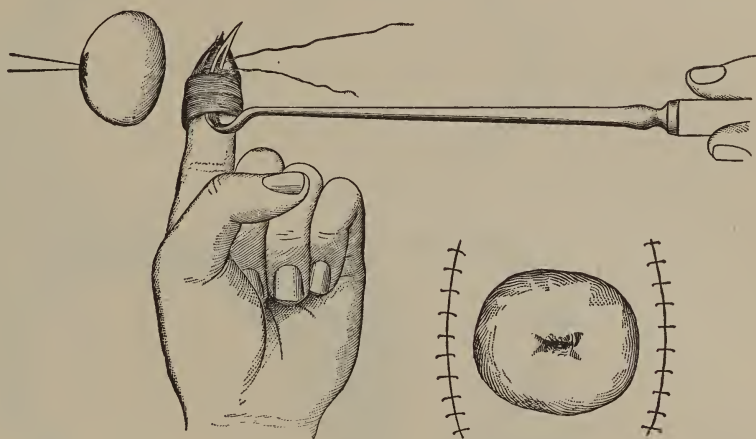


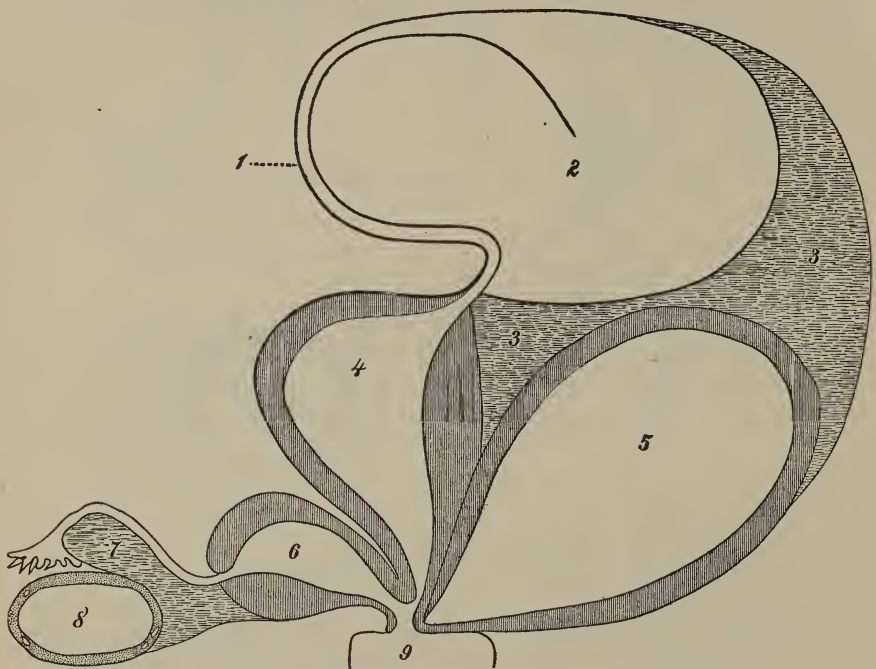
FIG. 4.

FIG. 5.

UTERINE FIBROIDS. (MARTIN.)
North American Practitioner.

Hysterectomy for Trifid Uterus.—A trifid uterus, a cyst of the ovary, and one of the broad ligament, in the same patient, were removed by abdominal hysterectomy by Depage.²³⁶ The specimen, seen in diagram on next page, consists of five parts: a cystic tumor of the left broad ligament, with thick walls of connective tissue containing the remains of the ovary, and an irregular cavity into which the tube opened; the right ovary, the size of an egg, with a sanguineous cyst at the centre; the womb, measuring six centimetres externally, its cavity being normal. At its orifice was the tube corresponding with the tube of the right side. The wall was normal in character. The neck did not accompany the organ. Microscopical examination demonstrated the histological character of the normal uterus. The epithelium, so to speak, had

disappeared completely and the chorion disclosed an extreme number of glands. The tumor behind the pubes, and which possessed the volume and aspect of the body of the uterus, measured about one to one and one-half centimetres. The cavity, which resembled the uterus, constituted the orifice of the tube corresponding to that in the cyst of the left side. This tumor also resembled histologically the body of the uterus, presenting only a trace of epithelium and less numerous glands. The third tumor was adherent to



TRIFID UTERUS WITH CYST OF OVARY AND BROAD LIGAMENT. (DEPAGE.)

1, Left tube; 2, cyst of the ovary and right broad ligament, containing decomposed blood; 3, left broad ligament; 4, cavity containing decomposed blood; 5, cavity closed, containing decomposed blood; 6, cavity; 7, right broad ligament; 8, cyst of the right ovary; 9, vagina.

Archives de Tocologie.

the neck of the uterus, with which it formed one cavity. This mass, under microscopical examination, also presented the same structure as the uterus. [I recently operated upon a Jewish lady, single, about 47 years of age, with a double vagina, into each of which opened the orifice of the uterine canal. The introduction of the sound into each disclosed that they had no communication. The patient had complained for a number of months of attacks of violent pain, particularly during menstruation, accompanied with

hæmorrhage. It was decided to remove the uterus. Upon opening the abdomen it was found that the neck of the organ was common, though it was penetrated by two canals. The bodies were separable and each contained subperitoneal, interstitial, and submucous fibroids. In the right, or larger, half was a fibroid of considerable size, which presented at its lower end a teat-like projection which evidently entered the cervix and acted as a ball-valve during menstruation. The entire organ was removed and the patient rapidly recovered.—ED.]

DISEASES OF THE TUBES.

Mary A. Dixon-Jones¹²_{July 21, '94} gives the following result of her researches upon the anatomy of the Fallopian tubes: 1. In the tube-wall are six layers of smooth muscles. The two main layers are the circular and longitudinal, these being interlaced. The circular has the broader area and is nearer the calibre; the longitudinal is nearer the peritoneum. 2. The inner surface of the tube-wall is made up of myxomatous or myxofibrous connective tissue, which in turn is supplied with two muscle-layers, a broader longitudinal and a narrow circular, both interlacing. 3. The mucosa has folds with many ramifications, serving for the occlusion of the calibre during life. These folds are the result of alternate contractions and extensions of the two muscle-layers of the mucosa,—the transverse and the longitudinal,—which are visible throughout all the folds and all the ramifications, arranged in bundles close beneath the epithelial layer. 4. Outside of the longitudinal layer of the tube-wall is the layer of blood-vessels, mainly arteries and veins, in an arrangement similar to that known to exist in the walls of the uterus. 5. Beyond the vascular layers are the two narrow layers of smooth muscle-fibres, both being oblique, both traceable from the uterine ostium up to the fimbriated extremity of the tube, and corresponding to the two oblique layers of the wall of the uterus. The two oblique layers are bordered outwardly by the peritoneum, and seem to serve mainly for the regulation of the afflux of blood in the subjacent arteries and veins. 6. The circular and longitudinal muscle-layers are antagonistic in their action. If one layer is contracted the other is relaxed. Again, the two muscle-layers of the tube-wall proper

are antagonistic in their action to the muscles of the mucosa. The contraction of the muscles of the tube-wall is accompanied by a corresponding relaxation of the muscles of the mucosa. Within the folds the primary, secondary, and tertiary ramifications are produced by alternate contractions of smaller portions of the muscle-layers of the mucosa.

Landau, of Berlin, ¹⁸⁸_{Oct., '98} in discussing salpingitis, maintains that spontaneous resolution and healing may occur, and that no surgical intervention is justified for the violent, colicky pains of circumscribed peritonitis. Narcotics are the sheet-anchor in treatment, most valuable of all being opium in suppositories, with the application of cataplasms over the abdomen, either hot or cold, as the patient may prefer. It is preferable to use ice where there is fever, or poultices where it is absent. Leeches are invaluable in strong and robust patients. The author has known a number of cases in which death has occurred after operation for extirpation of the tubes. Even where it is necessary to operate later, he has never regretted waiting until the subacute stages, when the inflammation has become circumscribed, rendering the opening and evacuation of purulent material safe and easy. The septic contents of the abscess lose their virulence, and the germs have succumbed and are impotent to excite peritonitis. By emptying the pus-cavity, curetting the pyogenic membrane, and draining, the patient makes an uninterrupted recovery. When salpingitis becomes chronic the treatment will depend upon the objective and subjective symptoms. Without speaking of the pain and discharge which follow laparotomy, it may, and often does, provoke new disorders,—as hernia, floating kidney, intestinal adhesions,—sequelæ; it is true, which may be moderated by suitable treatment; but other symptoms come on later,—as grave nervous troubles in women who have never before been neuralgic or hysterical, vertigo, cerebral congestion, numbness in the limbs, itching, insomnia, obesity, lassitude and weakness, cephalalgia, anæmia, incapacity to work, irritability, changeable humor, and possibilities of imbecility. In the treatment of such cases massage is an enormous aid, both in removing adhesions, promoting absorption, evacuating the tube, stimulating muscular contraction, and effecting spontaneous discharge of the fluid. It will always relieve the patient, and can never be harmful in trained

hands. It can be supplemented to advantage by warm vaginal irrigations, poultices, local and general bathing. Dilatation of the cervix tends to favor tubular evacuation, but must be practiced with great prudence.

F. H. Davenport, ⁹⁹_{Apr. 26, '94} in discussing the non-surgical treatment of chronic pelvic inflammations and their sequelæ, directs particular attention to the condition of a more or less extensive localized pelvic peritonitis from which arise adhesions between the layers of the peritoneum, investing the pelvic viscera and causing a displacement and thickening. The whole pelvis may be affected, or the disease may be confined to one side or to a single limited area of one side. The uterus, ovaries, tubes, and anterior wall of the rectum may be so matted together that they form one mass in which the various organs are indistinguishable by bimanual examination, or there may be a single thickened point to mark the presence of a former inflammation. These cases were formerly classed under the head of pelvic cellulitis. Such conditions arise as a result of gonorrhœal abortions, septic processes from meddlesome or uncleanly treatment, or trauma. While adhesions are the most evident results of peritonitis, yet the uterine trouble and ovarian conditions which precede or accompany it go to make up the complete pathological picture and may be considered as part of the disease to be treated. Where there is no direct evidence that pus-tubes, ovarian or parovarian tumors are present, treatment should be conservative. The great obstacle to accurate diagnosis is the sensitiveness of the parts. To overcome this, which should be the first aim, no agent is nearly so effective as glycerin. By its affinity for water it draws the serum from the blood-vessels, and, by directly unloading those in the immediate vicinity, promotes a more regular and natural circulation of the part. The author uses the glycerin on prepared wool tampons. The wool tampon has the advantage over cotton that it is elastic, does not mat, and will hold a large amount of glycerin in its meshes. It is worn for forty-eight hours, unless it gives distress, when it may be removed earlier. It should be applied every third day. The vault of the vagina may be painted with Churchill's iodine. A more effective analgesic is ichthyol, which may be combined with the glycerin. The second indication, to restore the mobility of the uterus and stretch or break up the adhesions, may be accomplished

by stretching the adhesions and keeping them so. The cervix may be seized with a double tenaculum and moderate traction made on it, while one or two fingers of the left hand, inserted into the posterior *cul-de-sac*, gently lifts the uterus and carries it forward. In this way the adhesions can usually be felt or the inflammatory swellings palpated. Massage of short duration may now be practiced, with gradual increase in force. When the uterus is raised as much as safety permits, the vagina is thoroughly packed, as firmly as the patient can bear, and the tampon left three or, at the most, four days. The author usually packs the second time before repeating the lifting by massage, as it is very apt to cause sensitiveness if repeated at too short intervals. Finally, in those cases in which progress seems to be arrested, a great deal of benefit can be accomplished by the introduction of a cushion pessary.

Pelvic massage in the treatment of these conditions has been strongly advocated by Courtin,¹⁸⁰
Mar. 5, '94 who reports a successful case in a young woman who had been under previous treatment for six months for periuterine hæmatocele, with salpingitis and parametritis. Upon examination it was found that the lower part of the posterior *cul-de-sac*, though elastic, was invaded by a hard tumefaction, which occupied all the right lateral *cul-de-sac* and a part of the anterior. The uterus was fixed and an attempt to move it with the finger to the left caused severe pain. The temperature being normal and no purulent collection being present, massage was commenced by anointing two fingers with mercurial ointment, introducing them into the vagina, and exercising friction over the posterior *cul-de-sac*, and to the right laterally and anteriorly. After this first treatment, which was a little painful, absolute rest in bed was enjoined. There was an absence of inflammatory reaction. After the eighth *séance* the tumor in the posterior *cul-de-sac* had entirely disappeared, the induration in the right broad ligament had become less and was not so painful. After the twelfth *séance* the induration did not return, and the patient began to menstruate regularly without pain. On final examination the uterus was found free, slightly enlarged, and painless. The patient could then work without fatigue.

Hartmann,⁵⁵
Mar. 24, '94 observes that, in examining three cases of tubal pregnancy with hæmatosalpinx and two with retro-uterine

hæmatocele, he found streptococci in two. In 33 cases of pus-collections in the tubes the pus was sterile 13 times, while 13 times it contained gonococci,—12 times in the pure state and once associated with the bacterium coli. In the last case the rectum had been indurated. Four times the pus contained streptococci,—once in the pure state, once associated with the bacterium coli, once with a small bacillus the character of which was not determined, and once the bacterium coli with this small bacillus and the chain bacillus. Pneumococci were twice found in the collection, once with the bacterium coli.

John R. Hinkson, of Long Island City, ¹_{Nov. 4, '93} reports an operation for removal of pyosalpinx which was followed by a faecal fistula. The operation was performed in the early part of June, but, the sinus still remaining in August and the patient being constipated, an enema was given. Half a pint (250 cubic centimetres) of water was ejected with considerable force through the sinus, followed by faecal matter. As the external opening was small, no other treatment was used than a piece of antiseptic gauze strapped tightly with strips of adhesive plaster. The patient became entirely well and has subsequently been in good health.

Wyeth ⁹⁶_{May, '94} reports a case of strangulated hernia in a woman in whom, when the sac was opened, a swollen, darkly-congested Fallopian tube was found, pus and faeces welling up from the abdominal cavity through the neck of the sac. An enlargement of the incision disclosed a loop of small intestine, gangrenous and ruptured, which had been caught and strangulated by an old band of adhesions. The patient died.

DISEASES OF THE OVARIES.

Abscess of Ovary.—Mundé ⁵⁹_{May 12, '94} observes that abscess of the ovary was formerly regarded as a result of puerperal infection. In 16 cases in which he has found it, only 5 had borne children or aborted; so that other conditions were more frequently the cause. A woman having such an abscess, although not seriously ill and able to be about, is scarcely ever free from pain, which is increased on exertion and at the menstrual flow. At times she may have chills, moderate rise of temperature, and in acute cases, as in puerperal conditions, the symptoms may become aggravated and active

surgical interference be required to prevent perforation. In the less acute cases the patients are more or less chronic invalids. The absorbent powers of the walls of such an abscess are slight, and their thickness prevents rupture; patients, therefore, may continue to live months or years in a state of more or less aggravated invalidism. Diagnosis is most likely to be confounded with pyosalpinx; in abscess of the ovary, however, a rounded tumor, similar in shape to an orange, can be felt; whereas the extension of the tube presents an elongated tumor, and the tubo-ovarian tumor produces a mass with irregular outline, the tube being curled back and attached to the ovary. In the latter case the differential diagnosis is not always possible. Treatment consists in the evacuation of the abscess; this, in many cases, means that not only should it be opened and the pus allowed to escape, but that the abdominal cavity should be opened and the sac enucleated with its tube. Where drainage is necessary the wound is cleansed and packed with iodoform gauze, one end being brought out at the lower angle of the wound.

Tuberculosis of Ovaries and Tubes.—Alban Doran, of London, ²_{Oct. 21, '93} remarks that experience demonstrates that tuberculous disease is not rare in the ovaries and tubes of young subjects where there is hereditary tendency to tubercle. The disease may occur in virgins; catarrh of the genital tract is not rare, and possibly may also favor tubercular disease by damaging superficial structures. Tubercle of the appendages may be limited for some time to those parts without setting up ascites, while in other cases this is an early symptom. The localized form bears a strong resemblance to ordinary inflammatory disease of the tubes and ovaries. The removal of the affected structures suppresses a focus of general peritoneal infection. Tubercle of the appendages with ascites is a most interesting disease, and probably not rare. It is hard to distinguish from the passive hydroperitoneum possibly set up by catarrh of the tubes and discharge escaping from the ostia. The correct treatment, when it is evident that the disease is tuberculous, and involves the peritoneum investing the ovaries and tubes, is to close the wound at once. If cheesy fluid be present it must be allowed to escape, and an emulsion poured in consisting of iodoform (fine crystals) 10 parts, spirits in quantity sufficient to make it damp, distilled water 20 parts, glycerin 70 parts. The iodoform

and spirits are rubbed together in a sterilized mortar, using the pestle well, and the glycerin poured in by degrees. If it is badly mixed it will clot.

Rinaud ²_{Oct. 18, '93} reports a case of removal of tubercular appendages followed by tubercular meningitis. The operation was performed May 5th, and on the 26th the patient was taken with vomiting, anorexia, and rise of temperature. Symptoms of tubercular meningitis slowly developed, and on June 2d there was left hemiplegia and the right side of the face was paralyzed, the patient dying on June 8th. A piece of brain covered with greenish exudate and a tuberculous deposit was found along the vessels of the pia mater. Max Madlener ³¹⁷_{June 2, '94} reports a case of tubercular ovarian cyst and tubercular uterine polypus. A smooth, movable cyst the size of a man's head contained tubercular material, and a not less interesting rarity was found in the fundus of the uterus in the form of an adenomatous polypus four centimetres long, tubercular, containing giant-cells and tubercular bacilli. Infection of polypi is extremely rare.

Cysts.—Maritan ⁵⁵_{No. 22, '93} reports an ovarian cyst which weighed 200 pounds (91 kilogrammes), removed from a patient whose weight before the operation was 290 pounds (132 kilogrammes) and circumference at the umbilicus ninety inches. She made a good recovery.

Bachmann ¹³_{Mar. 15, '94} states that when twisting of the pedicle of ovarian cysts occurs, the tumor is generally movable and not adherent to the surrounding parts; it has attained quite a considerable size, its form is more or less spherical, while the pedicle is sufficiently long to permit of its twisting.

F. Hooper May ²_{Dec. 2, '93} reports a case of ovariectomy during pregnancy in which the woman miscarried twelve hours after the commencement of the operation. (See illustration on next page.) The child was dead, and the patient had an uninterrupted convalescence. Condamin ²¹¹_{Jan. 28, '94} believes that the surgeon should not hesitate to perform ovariectomy in a pregnant woman. Early in pregnancy operation is safe, easy, and the chance of abortion very slight if ordinary care is taken. Later the risk is less than if the operation is deferred until after the puerperium.

Orillard ⁷_{No. 24, '93} reports a case of ovarian cyst with ascites which confirms Terrillon's theory that where there is ovarian cystoma,

and ascites develops without any evidence of visceral change to explain it, there must be some change in the cyst-wall. Sometimes vegetations will be found on the surface of the wall or perforating it from within, while in other cases simple sloughing or calcareous or fatty degeneration of the wall itself will account for the ascites.

Bland Sutton ²²_{Nov. 22, '93} describes a rare case of ovarian mamma removed from a young woman, 26 years of age, supposed to be



OVARIOTOMY DURING PREGNANCY. (MAY.)

British Medical Journal.

suffering from tubercular peritonitis. Upon opening the abdomen a lot of pus was discharged, mixed with hair and sebaceous material, showing it to be the remains of a dermoid cyst. On examination a peculiar, rounded body, growing from the wall of the cyst, was found, recognized as an ovarian mamma, and removed. It presented an ordinary nipple and a cluster of glandular material, the ducts of which traversed the nipple.

Operations.—The frequent occurrence of ventral hernia as a sequela of abdominal operations has led to the investigation of

other methods. Dührssen⁴ July 16, '94 states that the disadvantages of the ordinary operation are: The long duration of convalescence, during which the patient has to remain in bed two weeks and continue inactive for weeks longer. This, to the poor, is a great tax, and of great social significance, imposing, as it does, a great pecuniary burden. There is also the abdominal scar and the possibility of ventral hernia, with adhesions between the intestine or omentum and the pedicle or abdominal wall. It is impossible to avoid these intestinal adhesions, as of the ileus and omentum, which lead to severe disturbances of the stomach and to pain, and which may exceed in intensity the conditions for which the operation was performed. He proposes to avoid these disadvantages by a new operation which he has practiced in twenty-four cases, and which he calls vaginal laparotomy. The cervix is drawn down with bullet-forceps to the introitus, the anterior vaginal wall opened by a transverse incision, and the free wound-margin drawn out with a strong bullet-forceps. In the majority of cases the bladder will be drawn off from the cervix with the anterior vaginal wall, so that the anterior wall of the uterus to or above the internal os can be laid free. In most cases, with the index finger introduced, the vesico-uterine plica can be drawn out and laid open with the scissors, under the eye. If this is difficult, the operator can generally push the bladder up with the finger, separate the plica from the anterior wall, and through the highest visible part of the anterior uterine wall pass a transverse silk suture, and, drawing it downward, press back the cervix. There then appears in the wound, beneath the perceptible transverse bladder-swelling, a higher part of the anterior uterine wall, and, simultaneously with this (or after placing a further provisional suture), the plica vesico-uterine, as a thin, perceptible membrane on the anterior uterine wall, which, after it has been made perceptible, can be opened with the scissors. The peritoneal and vaginal wound-margins are then usually united by two catgut sutures. The uterus and its adnexa are drawn down through the opening, the anterior wall of the uterus seized as high as possible with bullet-forceps, the cervix passed backward, and the forceps drawn downward. The entire uterine body, together with tubes and ovaries, are drawn into the vulva, generally through the single transverse section in the anterior vaginal wall. The pelvic organs

thus being rendered visible, all operations which would otherwise be performed by ventral laparotomy are made easy. He has in this way extirpated the diseased appendages in 2 cases and enucleated numerous myoma from the uterus in 3 other cases. In 4 cases of fixed retroflexion of the uterus the tubes and ovaries, with numerous adhesions, were loosened with the aid of a Paquelin cautery. In 15 cases of mobile retroflexion the appendages were distorted and the ovaries exhibited numerous large cystic follicles, which were punctured with the Paquelin cautery and destroyed. Twenty-two cases of retroversion of the uterus were also thus treated, and two silk-worm sutures being introduced through the vaginal wound-margin, the fundus uteri being punctured. The adnexa and the corpus uteri were then replaced through the opening in the anterior vaginal wall and these sutures tied, the fundus being thus fixed against the anterior vaginal wall. When vaginal coeliotomy is undertaken in the normal situation of the uterus,—for example, as in ante flexion of the uterus and myoma,—the fixation of the fundus uteri is naturally superfluous, and a continuous catgut suture can be used, suturing through the peritoneum and vaginal wall. In vaginal fixation he converted the original transverse section by a continuous catgut suture into a sagittal wound, bringing the cervix backward. The patients recovered without any reaction, the uterus being in a completely normal position. One of the patients, three weeks after the recovery, conceived, and at the time of the report was in the sixth month of pregnancy. As to the special advantage of this operation over central laparotomy, the author points out the rapid recovery, patients being able to stand up after eight days. The immediate symptoms after operation are not greater than after curetting. They use no bandages, and, on account of the situation of the operation-scar in the anterior vaginal wall, there are no intestinal nor omental adhesions, and the possibility of scar-pressure is completely avoided; a special advantage is the trifling danger of the operation in comparison with ventral laparotomy. The anterior vaginal wound-margin lies quite firmly on the posterior uterine wall, which is pressed against the symphysis. The intestines never come in sight during the operation, and fatal cases or complications through sepsis are not observed. These advantages make it regrettable that the anatomical relations of

this operation naturally confined it within narrower limits than ventral laparotomy. It is only suitable in cases in which the cervix can be drawn down into the introitus, and in which the myoma is not larger than a fist. Ovarian tumors may be larger, but cannot be strongly adherent. Diseased appendages may thus be removed if they can be drawn down into the vagina.

Goodell, ¹¹²_{July, '94} in discussing the conservative treatment of the female pelvic organs, remarks that the question hinges on the effect of removal of the appendages upon the woman. He dwells upon the months or even years which sometimes elapse before the victim of the operation escapes from perspirations, heat-flashes, skin-tinglings, nerve-stress, nerve-storms, and other vasomotor disturbances which are so hard to bear. Mental disturbances, such as morbid brooding, low spirits, melancholia, suicidal impulses, and even insanity, follow ablation of the ovaries. It is a question whether this deplorable condition is directly due to the nerve-shock of the operation itself, together with its emotional environment, or to the absolute need of the ovaries for mental equilibrium. His experience leads him to believe that, in the majority of women who have been castrated, the sexual impulse soon abates in intensity, and, in many cases, wholly disappears after the lapse of a few years. He mentions two patients in whom the sexual relation was so repugnant as to make married life unhappy.

C. H. F. Routh, of London, ⁴⁹_{May, '94} concludes that the ovary, besides being concerned in ovulation, secretes especially, but in conjunction with other glands, a peculiar principle, spermin, which is re-absorbed into the blood, and in its nutritive, oxygenating, and recuperative power is most useful in maintaining the well-being of the female. Its absence leads to bodily and mental debility. Complete castration of females leads to forced sterility and in many cases to the induction of an earlier menopause and premature old age, and frequently to decay and perversion of mind. Partial castration produces the same effects in a minor degree. The mortality of cases of diseased adnexa left to themselves varies from *nil* to 4 per cent.; but the mortality of cases operated on by abdominal section varies from 2.5 per cent. to 12.1 per cent. Complete castration, in his opinion, has been practiced too frequently and often unnecessarily. Preceded by abdominal section, the modes of operating more conservatively by partial castration and resection

of tubes, or tubes and ovaries combined, and by ignipuncture of cysts in the latter, give much more satisfactory results with less mortality, even in cases of pyosalpinx, and with no impairment of the power of child-bearing. The mode of treating the diseased appendages *per vaginam* and *rectum*, without abdominal section, by acting on the uterus itself by electricity, even in cases of gonorrhœal pyosalpinx, and puncture by means of the aspirator, offers the greatest advantages, the mortality being almost *nil*, the recoveries durable, and motherhood being left intact.

Bland Sutton, of Middlesex, ²²_{June 6, '94} performed ovariectomy in a case of simulated pregnancy. The patient was 40 years of age and the mother of two children, the youngest being 12 years old. Since the birth of this child she had missed a period. In December, 1893, the abdomen began to enlarge, and at Christmas the patient believed she felt the movements of a child. As the case progressed, the woman, as well as her nurse, calculated, from the size of the abdomen, that delivery should take place in April. Everything was arranged for the confinement, but a child did not manifest any signs of appearing, though the patient was confident that she again felt movements of the fœtus. The attending physician began to suspect that something was wrong, and carefully examined the abdominal swelling, and came to the conclusion that it was probably a tumor. Bland Sutton was asked to see the case and determined that it was an ovarian tumor, and his view was confirmed at a consultation within the hospital. The tumor proved to be a multilocular cyst, with one large loculus predominating, and contained 20 pints (10 litres) of fluid. There were no adhesions. Sutton remarked that the chief interest in the case was the way in which the rapid growth of the tumor simulated pregnancy, and that he had dealt with two other similar cases.

J. Paul Bush, of Bristol, ²_{July 14, '94} performed ovariectomy in a woman 84 years of age. The temperature the first week after operation ranged between 96° and 97° F. (35.6° and 36.1° C.), then remained steadily at 97° F. (36.1° C.), which appeared to be her normal temperature. The wound healed rapidly, and the patient went home at the end of the month, cured.

In the after-treatment of cases of abdominal section, W. J. Stewart McKay, ²⁶⁷_{June 15, '94} advocates the use of cocaine, given by the mouth in $\frac{1}{2}$ -grain (0.033 gramme) doses, to prevent vomiting. He

relieves the distressing thirst by the use of hot-water enemata. Doran²_{Feb.10,'94} advocates the use of beef-tea enemata in old and feeble patients, and after prolonged operations. Barley-water is the best food for twenty-four hours; meat-broths should not be given until after the bowels have acted. Milk diet is to be condemned, but milk in small quantities, however, is beneficial after the third day. The bowels are best opened by drugs where there are signs of gastro-intestinal irritation, but ordinarily enemata will suffice. After action of the bowels, fish, fowl, and meat may safely be given. Sickness and flatulence are indications for a return to enemata.

F. Byron Robinson, of Chicago,⁸⁰¹_{Feb.17,'94} recommends the use of water, following abdominal operations, as the best means of assuaging thirst, and as the best diuretic. Hot drinks stimulate the shocked system, hasten depletion, check vomiting, and quiet irritation. Ice and cold drinks must be avoided.

Milton D. Norris²⁰⁴⁶_{'93} has experimented with a subcutaneous infusion of neutral salt solution after operation, consisting of 12 to 14 ounces (372 to 434 grammes) of sterilized water to which, after partial cooling, were added the whites of 2 eggs and 30 grains (2 grammes) of common salt. This was filtered through cheese-cloth and the resulting liquid injected, by means of gravity, into the buttocks. It has the advantage over the intra-venous method in that there is no danger of overwhelming the heart, the absorption of fluid being more gradual, nor of emboli or admission of air into the veins. He reports a number of cases in which this plan of treatment seems to have been of advantage.

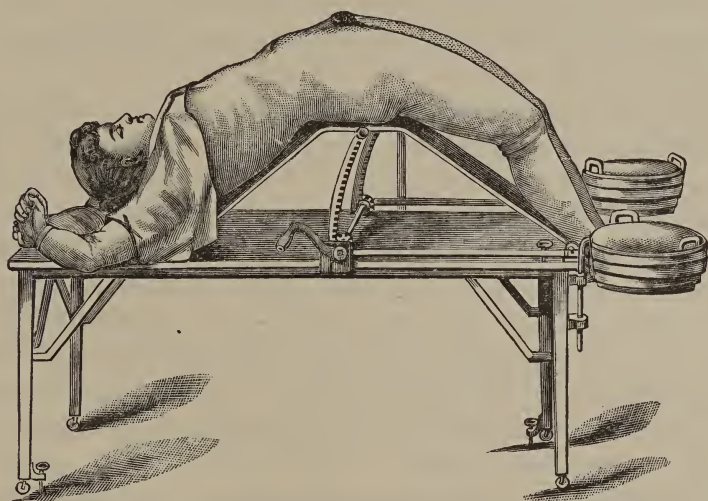
Technique of Operation.—Wathen, of Louisville,²⁷_{Sept.,'93} discusses the subject of careful technique, and attributes his good results in cœliotomy to the great care and sterilization of gauze, sutures, instruments, and dressings. He and his assistants wash their hands first with green soap, hot water, and sterilized brushes, afterward with 1 to 1000 bichloride solution. His instruments are washed with soap and a sterilized brush, and all unclean matter removed, especially from the openings where the blades are joined, and from the eyes of needles. They are then dipped in boiling water, wiped dry, wrapped in a sterilized towel, and put away. The water used for sterilization of instruments, sponges, and during operation, is filtered through a Pasteur filter and boiled. The

towels are used for no other purpose, are washed separately from other clothing, and boiled in clean water for half an hour. The silk for ligatures and sutures (three sizes) is loosely wound on glass spools for convenience during operation, wrapped in gauze with the silk-worm gut and needles. The necessary instruments are wrapped in a towel, and others that may be of use are wrapped in another and held in reserve. As it is impossible to know in what cases irrigation or drainage may be necessary, glass irrigation and drainage tubes, gum dam and tubing, and everything used for such purposes are put in the sterilizer. No patient is operated on until a careful examination of the urine has been made for albumin, casts, and sugar. Ether is not given where there is nephritis, and opiates are rarely used. Where the inhibitory powers are weak, an hypodermatic injection of the tincture of digitalis, 30 minims (2 cubic centimetres), and $\frac{1}{15}$ grain (0.0043 gramme) sulphate of strychnine is given just before the operation. A hot bath of green soap is given by the nurse the evening before the operation and another at 11 o'clock the next day. In each the vagina is irrigated. Thirty minutes before the operation the abdomen and pubes are shaved and again washed, then bathed in ether or alcohol and bichloride applied. In vaginal hysterectomy for carcinoma the uterus is curetted a few days before the operation, and all necrosed tissue removed. After careful sterilization its cavity and the vagina are tamponed with iodoform gauze.

Ernest W. Cushing ⁹⁹_{Aug. 30, '94} gives the following indications for drainage: 1. The presence of freshly-separated adhesions, or of voluminous pedicles, or of rents or incisions in the pelvic peritoneum which have required many stitches; in fact, of any condition which may probably lead to hæmorrhage or to oozing of bloody fluid. 2. The fact that pus or urine or fæcal matter, or the contents of cysts, or much blood has escaped into the abdominal cavity. Such a circumstance should always be followed by free irrigation with pure hot water and the use of drainage. 3. The perforation or incision of the intestine or bladder during operation, or a sloughy condition which makes it probable that perforation will occur. Even when an opening into these viscera found or made during operation is carefully sutured, experience shows that patients often recover with a fæcal or, as the case may be, a urinary fistula, who would presumably have died without drainage. Such

fistulæ heal eventually under proper treatment. 4. The presence of masses of exudates or of stiff walls of cavities from which diseased organs have been enucleated, which do not permit the intestines to snugly fill the pelvis, and which would offer a cavity where fluid could accumulate. 5. Almost any condition, such as shock or weakness, which has required rapid termination of a difficult operation, in which case the abdomen will usually be full of hot water.

Abdominal Section.—Czempin ³¹⁷_{Mar. 31, '94} presents a laparotomy table. Its advantages over any other apparatus for the Trendelenburg posture is that with the limbs turned downward the



LAPAROTOMY TABLE. (CZEMPIN.)

Deutsche medicinische Wochenschrift.

pelvis is placed at a different angle, so that the light falls more directly into the pelvic cavity. It gives more convenient access to the field of operation by avoiding projection of the knees or pressure against the shoulders. (See illustration.)

Complications of Operation.—N. T. Brewis, of Edinburgh, regards ³⁶_{Nov., '93} parotitis after operation on the sexual and abdominal organs as a result of a reverse sympathy; that cases which run through a course like mumps, ending in resolution, are due to this nerve-connection alone; but that those cases which suppurate while sharing the sympathetic relation must, from the number of fatal results which occur, be regarded as involved in septic intoxi-

cation. In suppurative cases which do not terminate fatally we may consider that the septicæmia has exploded in the parotid glands.

The relation of acute puerperal cellulitis and true pelvic abscess is discussed by Chas. P. Noble, of Philadelphia, ¹⁹_{Apr. 21, '94} who reports cases which demonstrate that in the puerperal state pelvic cellulitis and true pelvic abscess occur as a result of septic inflammation; that inflammation may spread from the vagina or uterus along the pelvic lymphatics to the broad ligaments without involving the Fallopian tubes; that peritonitis can be set up by the spread of inflammation from the broad ligaments to the peritoneum without inflammation of the Fallopian tubes; and that very extensive pelvic exudate and intra-peritoneal adhesions can be absorbed.

Noble, of Philadelphia, ⁸¹⁴_{Oct., '93} in considering the relations of urinary diseases to gynecological surgery, emphasizes the importance of systematic examination of the urine of gynecological patients, especially those requiring cœliotomy. The presence of albumin and casts in the urine need not affect the issue of the operation, though serious and prolonged cœliotomies, involving much handling of the abdominal viscera in women with chronic Bright's disease, especially the small, contracted kidney, usually terminate fatally. The prognosis is best when the albumin and casts in the urine are due to the pressure of a large ovarian cyst which can be readily removed.

The control of hæmorrhage often taxes to the utmost degree the ingenuity of the surgeon. A. N. Lewers ¹⁰⁷⁷_{Feb. 7, '94} reports a case in which, owing to rapid bleeding, a pair of large Wells forceps was left on the pedicle after ovariectomy for fifty hours. The patient recovered. Kelly ⁷⁶⁴_{Apr., '94} has ligated both internal iliac arteries for hæmorrhage in hysterectomy for carcinoma uteri. Although it was evident that malignant disease remained in the stump of the broad ligament, the patient recovered without any relapse. Rydygier ³¹⁷_{Mar. 31, '94} advocates the ligation of the uterine arteries for relief of hæmorrhage and arrest of growth in cases of myoma, in preference to the removal of the ovaries. Hæmorrhage after operation has been discussed by Buckmaster, of New York, ²³_{May, '94} who remarks that, when the abdomen is closed after section, no treatment short of that which is aggressively bad will influence the after-result.

Nothing, therefore, should be left undone, with the reservation that the case may require reopening. It is often better to run the risk of death from shock than death from hæmorrhage. Many of the fatal cases are the result of that state of mind which the operator revealed when he said, "I was afraid the patient would die on the table, and therefore quickly terminated the operation by pressure on the bleeding-points by a gauze drain of sponges." When symptoms of concealed hæmorrhage are present, it is too late to afford the patient more than a forlorn hope. The use of the drainage-tube to indicate hæmorrhage is not to be relied upon. It is best, when possible, to perform enucleation in all cases where the hypertrophied broad ligament forms a part of the pedicle. In cases of suspected hæmorrhage the pelvis should not be elevated, for in this position the blood will gravitate out of the pelvis and collect under the diaphragm, where it is impossible to remove it without eventration. This blood will in many cases set up peritonitis, and it is this peritonitis which has been blamed for many deaths due primarily to hæmorrhage. The patient may have no bleeding in the pelvis when in the Trendelenburg posture, because the arterial pressure is diminished, but when the pelvis is lowered bleeding of a dangerous character may occur.

Of the accidents which occur during abdominal operations, among the most serious are those of injuries of the ureter. F. Byron Robinson, of Chicago, ⁹⁶_{Oct., '93} claims that the ureter is occluded by the ligature about three times in every one hundred cases of vaginal or abdominal hysterectomy. It may remain tied a few weeks, when, by the giving way of the ligature around the ureter, the kidney may naturally resume its secretion, though it is more probable that the ligature will yield a little so that the ureteral lumen will be partially reopened, allowing the urine to flow through to a slight extent; or the ligature will cut through the ureter and a urinary fistula follow. Many deaths, especially in vaginal hysterectomy and abdominal hysterectomy, are entirely due to accidental ligature of one or both ureters. If but one kidney is thus affected, the case need not necessarily end fatally, unless the kidney should happen to be the one which did the main work. The author suggests that in case of a severed ureter the operator adopt one of the following measures: (a) place the ureter in the abdominal wound; (b) put it in the small intestine; (c) put it in the large

intestine; (*d*) ligate it completely and stitch it to the wound or drop it into the abdominal cavity; (*e*) extirpate the kidney; (*f*) if the ureter be divided close to its entrance into the bladder insert it into the top of the bladder by drawing the fundus of the bladder toward the kidney, and fix it by sutures so that the ureter will not be torn out by the emptying of the bladder or systole. In some experiments upon dogs he has found that complete occlusion of the ureter produces atrophy of the kidney. Partial occlusion produces hydronephrosis; the kidney-cavity becomes dilated and its walls thin. The kidney will bear complete occlusion for some weeks, and then resume its function after the obstruction and pressure are removed. The urine is secreted until its pressure is higher than that of the blood and prevents circulation in the glomeruli. The ligature is apt to cut through the ureter-wall and produce a urinary fistula, or is very apt to yield a little and allow the urine to trickle through. In such cases and in hydronephrosis, two ligatures should be thrown around the ureter at some distance from each other. Severed ureters should not be put into the small bowel, as active peristalsis prevents healing. It has been asserted that the irritation of the ligature on one ureter will produce suppression of the secretion of the other kidney, but this is not true; when a patient dies from ligature of one ureter it is likely that the other kidney is defective from disease, and that death is not due to reflex action. A man has double the amount of kidney required for ordinary use, but when an emergency arises he needs both, and with but one kidney is more apt to die from pneumonia or other acute diseases.

Penrose, of Philadelphia, ¹¹²_{Apr., '94} reports a case of abdominal hysterectomy in which the ureter was resected and implanted into the bladder. The patient recovered and subsequently experienced no inconvenience. To avoid the danger of injuring the ureters, J. Sinkler Irvine, ¹_{Aug. 25, '94} advocates the introduction of catheters into each ureter to maintain them in position during the performance of vaginal hysterectomy. [This would seem to me an awkward procedure, inviting injury to the organs which it is intended to protect.—Ed.]

Loumeau, of Bordeaux, ⁹⁶_{Apr., '94} reports a case in which he was operating for chronic inflammation of the pelvic organs, removing adherent and damaged appendages, and found a mass of inflam-

matory deposit extending from the abdominal wall to the rectum, entirely covering the ventral surface and the fundus of the uterus. This was cut away with scissors; the freed uterus was then drawn backward and, after the appendages had been removed, was sutured to the anterior abdominal wall. The abdominal wound was closed, but, before sending the patient to bed, a catheter was introduced into the bladder, and only a few drops of blood escaped. This awakened the apprehension that the bladder had been wounded, and the abdomen was immediately reopened, when it was discovered that the entire free end of the organ had been resected. The only portion remaining was that which lies upon the vagina, containing the two ureteral orifices and a small segment of the ventral wall. The peritoneum was then sutured, and, as a considerable portion of the bladder was destroyed, it was impossible to suture the remaining walls, and the peritoneum was therefore first sutured above the bladder, shutting off the peritoneal cavity. The fragment which remained in contact with the uterus and the vaginal wall was dissected, freed with great care, drawn forward and then sutured to the abdominal wall, thus forming a vesico-cutaneous sac. The patient recovered, and nine months later could walk a long distance without fatigue. The desire to urinate occurs every three or four hours, but is never involuntary, though the patient is obliged to bend forward and strain in order to completely satisfy the desire for urination.

J. Pfannenstiel, ³¹⁷_{Aug. 25, '94} in discussing the development of carcinoma after ovariectomy, states that in the malignant ovarian tumors removed by operation relapse is rapid, and, as a rule, occurs within a month. After ovariectomy for benign tumors malignant disease may appear, and may be regarded as late relapse. It is, however, independent of the removed tumor, and may develop either in the inner or outer portion of the peritoneal cavity. Carcinoma in these cases is a disease of itself.

Sequelæ of Operation.—A. H. McFarland, of Jacksonville, Fla., ²³_{Oct., '93} believes that gynecological operations are more likely to disturb the mind than any other surgical procedures, and that, in consequence, the antecedent history of the patient should always be determined. Operations should be performed on insane patients only when the physical condition endangers life or renders it insupportable. Patients should be in a calm frame of

mind before the operation, and previous moral treatment instituted before it is undertaken. Physical disease immediately preceding or associated with insanity should also be taken into account. Healthy genital organs do not usually give rise to reflex symptoms, and caution should be exercised in operating upon them for the relief of insanity, though such operations may be satisfactory in properly-selected cases.

Rohé,²⁰⁴⁶₉₃ in discussing the effects of castration upon the insane, reports 22 cases in which the uterine appendages were removed for ovarian, tubal, or other pelvic disease, and shows that, even in the most hopeless cases, a beneficial effect upon the mental functions was obtained by the removal of the persistent sources of local irritation. A case of hystero-epilepsy with violent maniacal attacks, lasting over eight years, was completely cured. Of 4 cases of puerperal insanity from two to five years' standing, 3 recovered and the remaining 1 was greatly improved. Three cases of profound melancholy recovered sufficiently to be discharged from the hospital. While he does not claim that mental disease indicates a gynæcological operation, yet, where sufficient disease exists to demand treatment on its own account, the mental disturbances of the patient should be an additional reason for early and effective interference.

Barbe¹²¹_{July, '94} attributed hysterical and non-convulsive manifestations associated with vitiligo of the hands, face, and different portions of the body, in a patient, to the removal of the uterine appendages for double-encysted salpingitis.

Strauch, of Moscow,¹³²_{June, '94} condemns the Trendelenburg posture and reports three cases of thrombosis of the veins of the lower leg following operation in this position. One of these cases was still further complicated by pulmonary embolism, from which the patient fortunately recovered. He attributes the condition partly to the use of ether instead of chloroform, but chiefly to the acute flexion of the leg in the Trendelenburg posture, and proposes to use a table of his own device, on which the patient lies with the pelvis lifted, but the legs distended.

Locke¹_{Jan. 13, '94} presents specimens of calculi which had been passed by a patient on whom operation for suppurating ovarian tumor had been performed a year previously. The calculi were believed to have been formed on silk ligatures as nuclei.

The occurrence of fistula following abdominal operations has been discussed by F. B. Robinson,¹⁹⁹_{Nov., '93} who states that, if the case be one of gonorrhœal pyosalpinx, it will not be strange to find a fistula follow, as it is difficult to remove all the diseased tissue or wash out of the abdomen all the *débris* produced during the manipulations. Infected ligatures, especially when large, frequently cause fistulæ. They should be few and small. He recently assisted a gynæcologist who deliberately pushed the needle, armed with silk ligature, through the Fallopian tube, dragged the ligature through the mucous membrane for six inches, and included the broad ligament in that ligature. He could not have found a more effective method of infecting the ligature. Septic matter finding lodgment in some part of the wound may cause pockets two weeks after an abdominal section. Drain-tubes may also be the starting-point of fistulæ, as well as infection of the wound by dressing, stitch-abscess, placing of the stump of the uterus into the lower angle of the wound, or injury to the gut, bladder, or ureter. In order to prevent the formation of fistula, the tube should be ligated close to the uterus in pus-tubes, cutting out, if necessary, that portion which runs into the wall of the uterus, and using fine silk for ligatures.

The treatment of fistula indicated by the author is: (1) good drainage; (2) removal of the offending ligature or other object; (3) probing, packing, and cauterizing the fistulous tract. If not practicable to drain through the abdomen, the vagina may be utilized.

Calculus.—Polaillon⁴⁸_{Sept., '93} describes a stony concretion found in the pavilion of the oviduct, weighing about 5 grammes (1½ drachms). It was regular, nodulated, and at certain points presented convolutions something like cerebral convolutions. As no trace of the ovary could be found, the author was convinced that the calculus was nothing but the ovary itself, which had atrophied and undergone almost complete calcareous transformation.

ECTOPIC GESTATION.

It is no longer disputed that the great majority of cases of ectopic gestation originate in the Fallopian tube. J. C. Webster, of Edinburgh,²⁷_{v.30,p.171,'94} makes the following excellent classification, in which cornual pregnancy is not included:—

I. *Ampullar*, in which gestation begins in the ampulla of the tube. This is by far the most common origin.

1. Persistent. In rare instances the tubal gestation may go on to full time.

2. Rupture may take place early into the broad ligament,—subperitoneo-pelvic, tubo-ligamentous, extra-peritoneal, broad-ligament gestation. (a) The gestation may continue to develop,—subperitoneo-abdominal. (b) A secondary rupture of the subperitoneo-pelvic gestation may take place into the peritoneal cavity. (c) The gestation may come to an end by the formation of an hæmatoma; by suppuration; by mummification, adipocere, or lithopedion formation.

3. Rupture may take place into the peritoneal cavity. (a) Tubo-peritoneal gestation, in which the escape of the fœtus and membranes occurs into peritoneal cavity, the placenta remaining in the tube, its development continuing. (b) The gestation terminates in various ways: by the formation of an hæmatocele, the patient dying from the shock and loss of blood, or from peritonitis. In some cases absorption of the mass may occur. In others mummification, adipocere, or lithopedion formation may take place in the fœtus. Suppuration may result.

4. The gestation may be destroyed (a) by the formation of a tubal abortion and its passage through the fimbriated end of the tube into the peritoneal cavity; (b) by the formation of an hæmatosalpinx; (c) by the formation of a mole; (d) by suppuration resulting in a pyosalpinx; (e) by absorption after early death, by mummification, adipocere, or lithopedion formation.

II. *Interstitial*.—The gestation may develop in the interstitial portion of the tube: 1. The gestation may go on to full time. 2. Rupture of the gestation into the peritoneal cavity may occur. 3. Rupture into the uterine cavity may occur. 4. Rupture both into the uterine and peritoneal cavities may occur. 5. Rupture may occur between the layers of the broad ligament. 6. After the death of the fœtus it may remain in its sac, and possibly may undergo the same changes as in other forms,—*e.g.*, mummification, adipocere, or lithopedion.

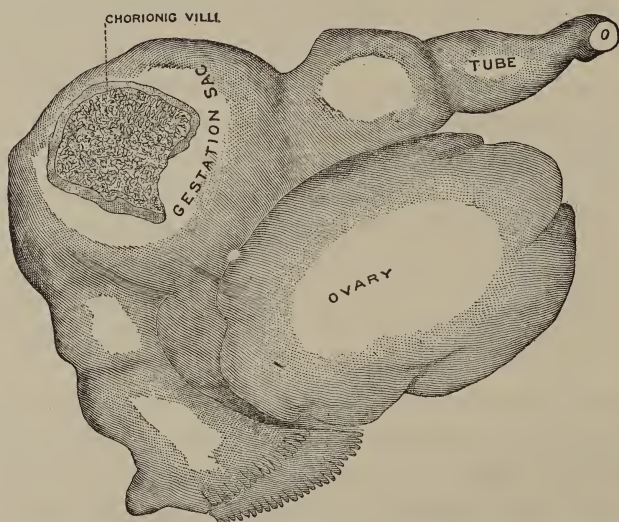
III. *Infundibular*.—The gestation begins in the outer end of the tube or in an accessory tube-ending. Under this heading are to be included the forms described as tubo-ovarian and tubo-

abdominal,—names which appear to the author to be unnecessary, since the gestation is a tubal one in origin, the end of the gestation-sac merely becoming adherent to the abdominal wall, the ovary, or other of the viscera.

The same writer ³⁶_{Nov., 188} says that tubal gestation has been attributed to the following conditions: 1. Those mechanically interfering with the passage of the ovum to the uterus,—*e.g.*, peritonitic bands constricting the Fallopian tube; polypi in the tube-lumen; tumors of its wall; tumors of surrounding parts pressing upon it; abnormal foldings of its wall; and diverticula from the lumen of the wall. 2. Those interfering with the peristaltic action of the tube, as adhesions and inflammatory thickening of its walls. 3. Those destroying the action of the cilia and lining cells of the mucosa,—*i.e.*, endosalpingitis. Notwithstanding Tait's view to the contrary, the spermatozoa undoubtedly come in contact with and fertilize the ovum in the tube. It is not uncommon to find an early tubal pregnancy in the outer end of a tube the inner end of which is perfectly normal. Such cases have been observed by Bland Sutton, Martin, and the author. The second question to determine is whether there is any ground for supposing that the fertilized ovum can develop in the normal mucosa of the Fallopian tube.

In the lower animals there is very little difference between the oviduct and the uterus, but in man they behave differently in the reproductive process, the mucous membrane of the tube being passive and that of the uterus active. Differentiation is as marked as between the lining membranes of the œsophagus and the stomach. All the latest embryological investigations support the view that the attachment and early development of the ovum take place entirely in relation to the subepithelial connective tissue of the mucosa. It cannot, however, be definitely asserted that menstruation is a process essential to the removal of the epithelium. The difficulties in this theory are as follow: (1) pregnancy may occur in a girl before the onset of menstruation,—at a time, therefore, when the mucosa cannot be denuded by that process; (2) it may occur late, during the period of lactation, when there is no menstruation, and after the mucosa has been completely renewed; (3) it may take place at the menopause, during a period of amenorrhœa; (4) it may occur in periods of amenorrhœa associated with

diseased conditions,—*e.g.*, anæmia and phthisis; (5) clinical experience of cases of pregnancy following a single coitus show that the ovum may begin to develop at any time,—not necessarily immediately after menstruation; (6) in the great majority of mammals menstruation does not take place, and in many of them we know that the ovum develops in relation to the connective tissue of the mucosa. It is not necessary, however, to look to menstruation for the establishment of this process, as the absorptive power of the trophoblast or outer layers of the foetal epiblast is a most important factor in bringing about its disappearance. Examination has shown that the rapid changes which take place in the



GRAVID FALLOPIAN TUBE REMOVED BY SECTION. (PENROSE.)
University Medical Magazine.

connective tissue of the mucosa, leading to the formation of the *decidua vera*, cause the covering epithelium to be stretched and broken up. This occurs not only in the tube in which the ovum may be fecundated, but in the other as well.

Hanks ²⁷_{Sept., '93} reports a case in which the condition was discovered when the period was but five days overdue. A young woman suddenly suffered from colicky pains and bleeding. A second attack occurred three weeks later. No membrane or ovum could be detected, and there was no pelvic tumor. An operation was performed and an ovum removed from the tube, after which the patient recovered.

C. B. Penrose¹¹²_{Feb., '94} reports a case of gravid Fallopian tube removed by section before rupture. The patient had an ovarian cyst about the size of the foetal head on the left side. The tube and ovary on the right side were but slightly adherent. The tube distended at about the middle to the size of the last phalanx of the thumb and was unruptured. The accompanying diagrams show the condition of the tube.

H. C. Bloom, of Philadelphia,¹¹⁹_{July 23, '94} reports a case in which section was done for a double extra-uterine pregnancy thirteen weeks after the patient had aborted.



GRAVID FALLOPIAN TUBE REMOVED BY SECTION. (PENROSE.)

University Medical Magazine.

Kirchoff²_{Apr. 7, '94} reports a case of ectopic gestation in which section disclosed the presence of thoracopagous twins.

S. Patellani, of Milan,¹⁶⁴_{July 26, '94} reports a case in which two lithopedions were found, and in which a recent extra-uterine pregnancy also existed.

The objection to procedures for destruction of the life of the foetus without operation for removal of the sac has hinged largely upon the continued subsequent growth of the placenta. Gubb,²²_{Apr. 4, '94} from a careful study of the clinical facts for and against it, is of the opinion that, under certain circumstances, the nature of which cannot at present be specified, the vitality of the placenta in extra-uterine gestation survives the death and disappearance of the

fœtus, and under these circumstances further growth and development of it may take place. Hence it is not safe to wait for evidence of the death of the fœtus before proceeding to remove the gestation-sac, seeing that the continued growth of the placenta may at any moment determine either a primary or a secondary rupture of the sac-wall, entailing sudden hæmorrhage, which will be the more formidable in proportion to the greater size which the placenta may have attained.

The first danger from continuance of gestation is rupture of the sac. B. F. Kingsley, of San Antonio,¹⁵⁷ Nov., '93 reports a case of tubal pregnancy (see illustration), in a woman 20 years of age, where rupture was induced in the fourth month by an attack of cholera morbus.

The following case, illustrating some of the difficulties in



TUBAL PREGNANCY. (KINGSLEY.)

Brooklyn Medical Journal.

diagnosis, is reported by Montgomery, of Philadelphia ¹⁹ Aug. 18, '94: The patient supposed that a miscarriage had occurred in February, but her abdomen continued to enlarge, and menstruation did not again appear until the following October. The abdomen was then as large as at full term, and she had felt frequently the fœtal movements. The menses continued regular until the following April, when she came under the author's observation. The abdomen was then about as large as at the eighth month of pregnancy. A symmetrical tumor extended to the lower end of the sternum, was elastic, fluctuating, and no hard, resisting portion could be discovered excepting at the lower part and to the left, where a mass could be recognized, which, upon vaginal examination, was found to be the uterus. The patient was becoming somewhat emaciated, and had had a temperature for a few days of 104° F. (40° C.). The entire abdomen was resonant. While it could be recognized,

there was apparently a cyst or tumor shut off from the rest of the abdomen, its entire surface presenting a deeper-toned resonance than that of the intestine. From the history and the physical signs it was decided to be a case of ectopic pregnancy in which the foetus had attained full term and had subsequently died, the decomposition in the sac having given rise, by the formation of gas, to the resonance. Operation was performed a few days later, when a sac was found situated behind and above the uterus, in which the placenta was attached to the anterior surface. The foetus was greatly macerated, as was expected, and the placenta could be removed with its accompanying wall. The cavity was then washed out, the peritoneum of the sac stitched to that of the parietes, shutting the opening off from the general peritoneal cavity, and the sac packed with iodoform gauze, nearly three yards of yard-wide gauze being required. The patient had an uninterrupted convalescence.

Smolsky ²³_{July, '94} presents the following propositions, based on his own experience:—

1. Laparotomy is indicated in tubal pregnancy diagnosed before rupture of the tube.

2. It should be performed in recent rupture with intra-abdominal hæmorrhage during the first months of an extra-uterine gestation.

3. Tubal pregnancy terminating in retro-uterine hæmatocele will probably end in spontaneous recovery.

Kelly, of Baltimore, ⁷⁶⁴_{Nov., '98} describes a vaginal operation for extra-uterine pregnancy in which he opened the abdomen and found, beneath coils of closely-adherent intestine, a dense mass in the pelvis. The patient was weak, her pulse was feeble, and general condition critical. The mass was too firmly adherent to justify its enucleation; so he introduced a finger into the vagina, and, assisted by the free hand above on the abdomen, was able to palpate the gestation-sac and obtain a definite idea of the size and relations. He then pushed the vaginal wall up until it came in contact with the sac-wall, so as to enable him to pass a pair of sharp-pointed scissors into the sac, and, guided by the vaginal finger, to withdraw them partially opened. With larger scissors, also withdrawn in a similar manner, he made an opening about an inch in diameter, and through it evacuated the embryonic *débris*,

washed out the sac with curved douche-nozzle, repeating the irrigation daily until the discharge ceased. The sac rapidly closed from above down to the vagina, and the patient made a satisfactory recovery.

GYNÆCOLOGICAL THERAPEUTICS.

Curettage.—Orloff ⁹⁰_{Aug., '94} advocates curettage of the cavity of the uterus in fibroids where the chief symptoms are menorrhagia and metrorrhagia. He claims that it is useful in three classes of cases, viz :—

1. In cases suitable for operation, but when the patients are debilitated by loss of blood the procedure affords a period of rest and freedom from hæmorrhage, which allows of recuperation before the major operation.

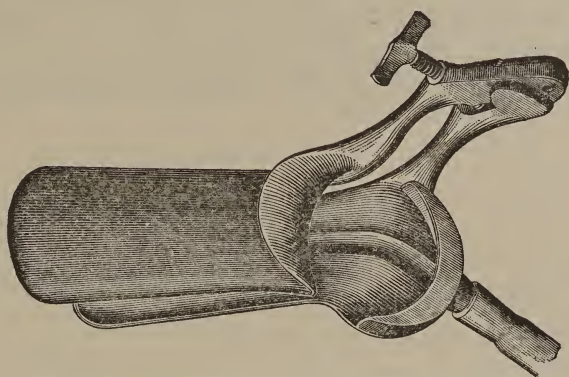
2. In cases of small fibroids which do not cause pain.

3. In cases in which the menopause is approaching.

In the latter class the operation may have to be repeated several times.

Gauze Drainage.—Sänger ⁵_{Sept., '94} sharply criticizes the generally-accepted view that gauze, when introduced into the uterine cavity, acts as a drain, believing that when the os is not stenosed the uterus drains itself, the artificial drain simply acting as a plug to the canal and preventing the escape of the accumulated blood. The gauze only permits the discharge of the thin, watery secretion, but not of purulent or viscid material and coagulated blood, which escape only after the removal of the gauze. The rise of temperature often noted is an indication of this retention. The expression "gauze drainage" is incorrect; it should be "gauze tamponade." The gauze simply dilates the cervical canal and sets up uterine contractions, thereby increasing the circulation of the uterus. After its removal drainage is better because the canal is more patent. He has had better results from gauze saturated with a solution of chloride of zinc. He uses the gauze tampon simply as a preliminary to cauterization of the endometrium. The real action of intra-uterine caustics has been generally misunderstood. Gynæcologists do not allow sufficient time for the caustic to act, and repeat the application at frequent intervals without waiting for the slough to separate, hence frequently causing cicatricial stenosis and other bad results. Sängér applies strong caustics at long intervals; 50-per-cent. chloride of zinc, introduced on cotton wound

around a silver probe, being suitable in all forms of endometritis. This should be used at intervals of from sixteen to twenty days, two or three such applications being sufficient to cure an ordinary case of catarrhal endometritis. The curette should be used as a preliminary.



IRRIGATION OF NON-PUERPERAL UTERUS. (TALLEY.)
Annals of Gynæcology and Pædiatrics.

Irrigation.—Frank W. Talley, of Philadelphia, ²³_{Dec., '93} advocates irrigation of the non-puerperal uterus, for which purpose he uses a speculum, shown in the accompanying diagram, which explains the method of its use.

Francis L. Haynes, of Los Angeles, ⁹_{May 12, '94} presents an irrigator (see figure), which has the following merits: that it can be introduced very readily through a cervix which is but moderately dilated; that it is almost impossible to obstruct the out-flowing



UTERINE IRRIGATING TUBE. (HAYNES.)
Medical News.

current; that it is readily sterilized by the ordinary methods, and that it is not materially affected by any antiseptic solution.

Massage During Menstruation.—It is generally customary to interrupt local treatment during menstruation, but Jentzer ³¹²_{No. 17, '94} ⁵_{July, '94} reports one hundred and fourteen cases, including various pelvic affections, from a review of which he deduces the following con-

clusions regarding treatment during menstruation: If pelvic massage is practiced during the flow it must be gentle and the sittings of short duration, the movements being those which oppose congestion. At this time it often relieves pain, and, if carefully conducted, never causes inflammation. Metrorrhagia is relieved, pelvic exudates more rapidly absorbed, and adhesions disappear more easily and rapidly. If massage is suspended during menstruation the treatment must of necessity be much more prolonged.

DISEASES OF THE VAGINA AND EXTERNAL GENITALS.

By J. M. BALDY, M.D.,

AND

W. A. NEWMAN DORLAND, M.D.,

PHILADELPHIA.

CLITORIS.

Epithelioma.—The literature of primary epithelioma of the clitoris is so scanty and the number of reported cases so small that any additional observation merits more than passing notice. Brindel presented, before the Bordeaux Medical Society, ¹⁸⁸ Feb. 18, '94 a remarkable instance of it occurring in a woman 70 years of age, and removed by Dubourg at the Hospital Saint-André. There was no hereditary taint in the family history, and the growth had been of but three months' duration, commencing with severe crises of pruritus, which persisted for about a month. At the expiration of this time a small, red, bosselated tumor appeared, bleeding on the slightest touch, and rendering locomotion impossible on account of the pain produced by the friction of the labia majora. The patient very positively affirmed that at first the tumor was strictly confined to the clitoris; soon, however, it invaded the prepuce of the clitoris, and was then accompanied by the development of a glandular enlargement in the left inguinal region, freely movable under the skin, and the seat of severe lancinating pains. The tumor of the clitoris was only visible upon wide separation of the labia; it occupied the site of the clitoris and had invaded the upper extremities of the nymphæ, but had not involved the labia majora; a space of about one centimetre separated its base from the urinary meatus. The general condition was excellent; there was no emaciation and no cachexia. The operation for the removal of the neoplasm consisted in a circular incision around its base, its dissection from the submucous cellular tissue, and division of the cavernous body of the clitoris

with the thermo-cautery; the inguinal tumors were enucleated. Recovery was rapid and satisfactory.

Anaphrodisia.—The question of frigidity in the woman is more serious than is generally believed; it is often the cause of considerable domestic unhappiness, and may even, in certain cases, lead to conjugal separation; it should, therefore, be regarded as a true morbid entity. Lutaud,²⁴_{Mar. 18, '94} has contributed a paper upon the treatment of this condition in which he claims that there exist certain cases in which a purely medical treatment may be instituted. For this purpose he employs the following prescriptions: Extract of *nux vomica* and extract of *cannabis Indica*, each 1 gramme ($15\frac{1}{2}$ minims); aqueous extract of aloes, 0.25 gramme (4 minims). This is made into 50 pills, 1 to be taken before each meal. Phosphorus is naturally indicated, and he prescribes it as follows: Phosphorus, 0.05 gramme ($\frac{7}{8}$ grain); carbon disulphide, 20 drops; oil of sweet almonds, 20 grammes (5 fluidrachms); magnesia, q. s. Fifty pills are made, to be coated with gelatin, each pill containing 0.001 gramme ($\frac{1}{64}$ grain) of phosphorus; of these pills, 2 to 4 are to be taken at meal-time. Musk, vanilla, santal, ginger, and saffron are in repute in the treatment of sexual apathy in man, but Lutaud has never used them with success in women. In those cases in which there exists atony of the digestive passages, Fonssagrive's formula may be of service. It consists of powdered vanilla and powdered cinnamon, each 3 grammes (46 grains); powdered ginger and powdered mace, each 1 gramme ($15\frac{1}{2}$ grains); powdered black pepper and powdered *nux vomica*, each 0.25 gramme (4 grains); and powdered carbonate of iron, 0.20 gramme (3 grains). This is divided into 10 cachets, 1 to be taken with each meal. Opium in small doses may be of service,—as, for instance, 0.01 gramme ($\frac{1}{6}$ grain) of the extract at bed-time. Relative success has attended the employment of cocaine, as in the following mixture: Hydrochlorate of cocaine, 0.25 gramme (4 grains); elixir of Garus, 250 grammes (8 fluidounces). A dessertspoonful of this is taken at bed-time. Electricity is never of service in the treatment of this condition. Bernardy, of Philadelphia, has suggested that in many instances sexual apathy in the female is a direct outcome of adherent prepuce, and recommends that in every case attention be directed to this point; if the prepuce be found adherent it should be loosened. He has

repeatedly noted a return of sexual appetite subsequent to this small operation.

Clitoridectomy.—According to Eyer⁴⁵¹_{May, '94} orgasm in the female depends upon peripheral irritation or titillation of one or all of the branches of the pudic nerve; these branches are distributed to the clitoris, vagina, perineum, and anus, and the efficacy of treatment will depend upon its direct application to the hypersensitive branch. The recognition of this physiological truth will explain the failure of clitoridectomy to correct many cases of masturbation in the female which do not necessarily consist in titillation of that particular branch of the pudic nerve supplying the clitoris. Where, however, it can be definitely ascertained that the sense of voluptuousness resides entirely in the clitoris, the operation of clitoridectomy will be curative. In settling this point Eyer suggests the ascertaining, through the history of the case, of the source of the habit, the exact point of touch in the gratification of desire, and whether or not the patient's hymen is intact.

HYMEN.

Abnormalities.—Draper⁹⁹_{Feb. 8, '94} reported to the Obstetrical Society of Boston an instance of abnormally-formed hymen which had recently come under his observation. The subject of the anomaly was an unmarried woman 25 years of age. The hymen presented the following characteristics: From the middle point of the free edge of a moderately-thick, crescentic, membranous curtain, at the posterior segment of the ostium vaginæ, there projected forward and upward a thin band, about one-sixteenth of an inch in diameter, composed of tissue that was quite elastic and not tense, and having its anterior insertion just below the meatus urinarius. This band divided the vaginal outlet into two symmetrical orifices, oval in shape, each of a size to admit the tip of the index finger. The vaginal canal, above this unusual hymen, was entirely normal. Sabolotski⁴²²_{No. 9, '93}; ²¹_{Apr. 7, '94} encountered, in a woman who had twice given birth to children, an imperfectly-lacerated hymen; a strip of tissue, extending from beneath the urethral orifice to the perineum, represented the lacerated hymen. But five analogous cases are reported in literature. This exemplifies the truth that the hymen is not necessarily destroyed by coition or childbirth, and that its presence is not a proof of virginity. Hamilton²²_{Apr. 4, '94} reports a case

in which, four years after he had operated upon an imperforate hymen in a virgin of 17, he found the same patient again suffering from an almost imperforate condition of the hymen, following cicatricial contraction of the orifice made at the time of the first operation; the patient was then three months pregnant, although she confessed that her husband had never been able to have proper connection with her.

Atresia Hymenalis.—Cases of this condition are reported by Mitchell,²_{Dec. 16, '93} Green,⁹⁹_{Apr. 12, '94} Noble,⁵⁹_{Mar. 10, '94} and Péan.⁴³⁹_{Aug., '93} Noble remarks that the question when to examine young unmarried women who are suffering from symptoms referable to the sexual organs, and when to treat such women by general measures, is one that requires the most careful study on the part of the practitioner. His own rule is, if the symptoms complained of are apparently of a trivial character, to study carefully the patient's general health, and to address his efforts toward the cure of whatever conditions may be present, those most frequently met with being anæmia, indigestion, constipation, neurasthenia, and emotional excitability. In this class of cases, if the patient do not improve under judicious management, he then makes a local pelvic examination. On the other hand, when the symptoms complained of are such as to point to marked local organic disease, the question as to whether the patient be married or single is of minor importance. He believes that the better mode of making the examination is after the patient has been anæsthetized. In many cases examination *per rectum* will yield all the necessary information; so that a vaginal exploration can be avoided. Péan's case of atresia was rather one of vulvar imperforation simulating hymenal imperforation. It was in a child of 3 years, and the abnormality consisted in a glueing together of the nymphæ, which entirely obliterated the vaginal orifice. To this condition Péan applies the name of *vulvar imperforation*. The treatment consists in dividing the septum from the urethra to the fourchette, in the median line. In Mitchell's case the hymen was so distended by the retained menstrual fluid that simple digital examination caused it to rupture.

VULVA.

Vulvitis.—Lutaud²⁴_{Mar. 11, '94} would distinguish follicular vulvitis from vulvar herpes, the two having some characteristics in common.

Follicular vulvitis is characterized by an inflammation of the sebaceous glands of the vulva, giving rise to the presence of small, red, pruriginous tumors at the site of the glands. The treatment of this condition often consists in aseptic lotions and sedative and drying powders; the disease, however, being due to a retention of pus or sebaceous material in the follicles, this is at times insufficient. In these cases the vulva is greasy and often covered with sebaceous matter. Emollient hip-baths, alternating with alkaline baths, are here indicated. Morning and evening the vulva should be bathed with warm water and soap, and this followed by an application of powdered tannic acid 2 grammes ($31\frac{1}{2}$ grains), subnitrate of bismuth 1 gramme ($15\frac{1}{2}$ grains), and starch 50 grammes ($1\frac{1}{2}$ ounces). In rebellious cases painting with silver nitrate 1 gramme ($15\frac{1}{2}$ grains) to distilled water 20 grammes (5 fluidrachms) is of service, each application being followed by a vulvar bath of a saturated salt solution. When pustules form they must be evacuated under cocaine anæsthesia. During the treatment each morning an ichthyol suppository should be introduced into the vagina. Vulvar herpes is characterized by the rapid formation of one or more small groups of vesicles with inflamed bases; the seat of preference is upon the border of the labia majora or on the fourchette, at the junction of skin and mucosa. It is nearly always preceded by a period of febrile disturbance. The treatment consists in light caustic applications, as resorcin or carbolic acid, with 2 grammes ($31\frac{1}{2}$ grains) of resorcin or 0.25 gramme (4 minims) of carbolic acid, with 1 gramme ($15\frac{1}{2}$ grains) of cocaine hydrochlorate and 100 grammes ($3\frac{1}{4}$ fluid-ounces) of alcohol. Compresses moistened with this mixture are applied three or four times daily. During the height of the attack a soothing pomade of borax, glycerole of starch, and tincture of myrrh may be used, and when the scab has fallen a drying powder of lycopodium, tannin, and bismuth subnitrate may be dusted on. Richardière ²_{Nov. 18, '93} reports a case of gonorrhœal rheumatism complicating an attack of vulvitis in a girl of 7 years. Deutschmann has already noted cases of gonorrhœal rheumatism in children; he records cases in infants of 3 years or as young as 20 months. The disease may also follow ophthalmia neonatorum.

Pruritus Vulvæ.—Under the name of *vulvitis pruriginosa* M. Sânger, of Leipzig, ³¹⁷_{Feb. 17, '94} presents a comprehensive *résumé* of the

etiology and operative treatment of pruritus vulvæ. Schultze³¹⁷_{Mar. 24, '94} objects to the use of this term in all cases of pruritus for the reason that there are cases in which the pruritus is not due to vulvitis. J. C. Webster²⁰⁶⁰_{v. 3} considers the affection to be a subacute inflammation of the papillæ of the skin and a progressive fibrosis of the nerves and nerve-end bodies (Pacinian corpuscles), especially attacking the clitoris and the upper portions of the labia minora. Sängér believes that inasmuch as the disease depends upon an inflammatory affection of the corium it may be appropriately termed "vulvitis pruriginosa." He considers, however, that the lesion of the nerve-ends is not the primary cause of the pruritus, but a secondary change, resulting from a local affection of the vulva, due to the action of irritants from without. Many observers have endeavored to prove that the primary irritant is to be found in certain micro-organisms which may be discovered in the skin of the vulva. There is no proof forthcoming, however, that micro-organisms can induce the skin-lesions; it is more probable that their presence is secondary to pre-existing local affections. Sängér points out that if micro-organisms were the primary cause of vulvitis pruriginosa the affection would accompany all cases of vesical catarrh. In some respects this disease seems closely allied to the kraurosis vulvæ of Breisky, but changes in the nerve-endings have not been demonstrated in the latter affection, and pruritus is often absent in kraurosis of the vulva. Sängér suggests the following classification of the causes of vulvitis pruriginosa: I. ENDOGENETIC CAUSES. 1. *Hæmatogenetic*. This includes substances found in the blood in certain diseases (icterus, chronic nephritis, diabetes mellitus), and which cause itching by their action on the nerve-endings. Some chemical substances (morphine, alcohol, iodoform, etc.) act in the same way when introduced into the blood. 2. *Circulatory*. Passive congestion of the venæ pudendæ of the hæmorrhoidal veins, or of the pampiniform plexus, caused by disease of the heart, by pregnancy, by hæmorrhoids, or even by retroflexion or tumors of the uterus. 3. *Hæmatogenetic Skin Diseases*. Erythema, urticaria, herpes, and some forms of eczema which affect the papillæ directly or indirectly, by causing rubbing of the parts. II. EXOGENETIC CAUSES. 1. *Secretory and Chemical*. (a) Excessive activity of the cutaneous glands of the vulva (hyperidrosis, seborrhœa). (b) Continued contact with normal or

decomposed urine. (c) Pathological secretions of vulva, vagina, and uterus; gonorrhœal or desquamative vaginitis, cervical endometritis, cancer, or tumors of the uterus. (d) Catarrhal and purulent discharge from the rectum. This class produces the most intense forms of pruritus. 2. *Parasitic.* (a) *Animal parasites:* pediculi, oxyuris, vermicularis, etc. (b) *Vegetable parasites:* lepto-*thrix*, *leptomit*us, probably also *oïdium albicans*, *micrococcus ureæ* and *bacterium ureæ* (as indirect causes). Also, in a more specific manner, *gonococcus*; *smegma bacilli* and dirt bacteria; the various microbes of the skin and vagina; and, as causes of secondary infection of wounds produced by scratching, *streptococci* and *staphylococci*. 3. *Mechanical.* (a) *Primary:* masturbation; excessive washing and rubbing; the use of unclean or infected sponges. (b) *Secondary:* rubbing, scratching, etc., of the affected parts. 4. *Thermal.* The influence of temperature, as illustrated by the increased itching when the patient is in bed or in a warm bath. Schultze³¹⁷_{Mar. 24, '04} calls attention to the fact that pruritus is often directly due to a pathological condition of the endometrium. In every obscure case it should be sought for, and, if present, local treatment may result in a cure.

T. More-Madden²⁶_{Sept., '04} remarks that in some cases pruritus is consequent on the general hyperæmia of the genital tract that ushers in the catamenial epoch or which attends the menopause. As to the treatment of pruritus, Sängér says that in the majority of cases general and local treatment will succeed in curing, or at least in greatly relieving, the complaint. In a small number of unusually severe and obstinate cases it becomes necessary to remove the diseased parts by operation. The first operation for pruritus was performed by Carrard in 1874, the clitoris only being removed; since then similar operations have been performed by Chrobak, A. R. Simpson, Schröder, Rheinstädter, Olshausen, and others. Heitzmann has obtained good results by scraping the affected parts. In obstinate cases Sängér considers partial or total extirpation of the vulva as quite a legitimate operation, especially in elderly patients. In the local treatment of the disease More-Madden²⁶_{Sept., '04} has obtained excellent results by using a strong solution of methylene-blue; in many instances, however, and especially in private practice, the staining following the use of methylene-blue is strongly objected to, in which case the older remedies must be used. For

the itching, Lutaud ⁴³⁹_{Jan., '94} recommends the application of the following ointment: Cocaine hydrochlorate, 2 grammes ($31\frac{1}{2}$ grains); adeps benzoic., 20 grammes (5 drachms); essence of rose, q. s. For the accompanying insomnia he prefers ammonium bromide, 10 grammes ($2\frac{1}{2}$ drachms); chloral hydrate, 5 grammes ($1\frac{1}{4}$ drachms); syr. aurant. cort., 90 grammes (3 fluidounces). A tablespoonful of the mixture to be taken at bed-time. If the bromides produce erythema he substitutes sulphonal and antipyrin, each 0.50 gramme ($7\frac{3}{4}$ grains), in a wafer; one or two, if necessary, to be taken at bed-time.

Kraurosis Vulvæ.—Martin, of Berlin, ³¹⁷_{Mar. 31, '94} adds 3 cases of kraurosis to the 5 described by Orthmann five years ago; in 1 of the 3 carcinomatous nodules were detected in the kraurotic tissue. Martin does not agree with Sängcr that kraurosis is a progressive presenile or senile atrophy of the vulva with pachydermia. The disease cannot be traced to any venereal or microbial influence. It may occur in young or old, virgins or multiparæ. The earliest stage of the disease, at least, is inflammatory. A feeling of tenseness is more frequent than itching. Sängcr ⁹⁰_{Apr., '94} believes that the absence of itching in kraurosis may be accounted for by a rapid and serious involvement of the nerves, which become atrophied by pressure; when itching exists it indicates that the nerves are not so seriously affected. As fissures develop, irritation results, with consequent neurotic and other evil symptoms. The diagnosis depends less on the disappearance of the pigment in the parts than on the shrinking of the tissues, first in the posterior commissure and labia minora, and lastly in the clitoris and labia majora.

Hydrocele Feminina.—Eisenhart ³⁴_{No. 9, '94} remarks that, in 48 cases of hydrocele in the female reported in medical literature, 29 were situated upon the right side and 19 upon the left. Although the etiology of the condition is obscure, he considers traumatism and congenital defect as the most frequent causes. Lloyd G. Smith ²_{July 28, '94} believes that hydrocele in the female—also termed hydrocele in the labium majus and hydrocele of the canal of Nuck—is not so rare as has been supposed, as during a period of less than four years five cases have been operated on in the Tottenham Hospital. As regards diagnosis, the most reliable test consists in pressing the cyst down and defining the upper border, when the continuation upward will be found to be too small for a hernia.

The treatment is operative, the cyst being exposed by a linear incision and enucleated after ligature of the neck; the wound is then closed by superimposed layers of continuous sutures of juniper-gut, and an antiseptic dressing applied. Gerke⁶⁹_{June 7, '94} objects to simple puncture of the hydrocele, as half of the cases so treated are not radically cured, and there is danger of peritoneal infection. Dissecting away the sac prevents recurrence, but does not protect the patient from inguinal hernia, to which she is unusually predisposed, as the inguinal canal is often dilated in hydrocele. He has twice practiced excision of the sac with closure of the canal, as in the usual radical operation for inguinal hernia. The results were excellent. Fortin¹⁶²_{Nov., '93} describes a case occurring upon the right side in which tapping was twice resorted to, with injection of a 2½-per-cent. solution of zinc chloride at the first treatment and creasote glycerin at the second. A cure resulted.

Vulvar Vegetations.—In the treatment of these annoying growths Raulin¹⁸⁸_{May 27, '94} urges the importance of cauterization with pure carbolic acid, the surrounding tissues being protected by inunctions of vaselin. The therapeutic effect is sure and prompt. The cauterized surface should be subsequently protected by a layer of cotton. Venot¹⁸⁸_{Apr. 29, '94} prefers the use of the scissors. For vegetations of small size Lutaud²⁴_{Feb. 25, '94} employs desiccating and astringent powders, such as powdered savine and calcined alum, each 5 grammes (1½ drachms); mercuric sublimate, 0.20 gramme (3 grains). The addition of salicylic acid (4 grammes—1 drachm) renders more powerful the caustic action. Caustic liquids give better results, but their employment is more painful. Chromic, salicylic, and carbolic acids are those most commonly used. If the growths are pedunculated, curetting and excision may be performed. For larger vegetations some operative procedure is indicated. The ligature may be of service when the pedicle is small; the thermo-cautery should be reserved for voluminous and largely-pediculated papillary tumors. Occasionally these vegetations are seen in young girls absolutely free from venereal taint, and in diabetics. In such, internal medication may be of value. Tincture of thuja occidentalis (10 grammes—2½ fluidrachms) and elixir of pepsin (190 grammes—6 fluidounces) make an excellent prescription, a coffeespoonful being administered before each meal. Ballenghien, of Roubaix,²²⁰_{Sept. 29, '93} is also in favor of caustic applica-

tions in preference to surgical intervention in the treatment of these growths.

Chancroids.—In differentiating phagedenic chancroids of the vulva from the ulcerated form of epithelioma, Davis²⁰⁷_{Dec., '93} suggests the following points of distinction:—

EPITHELIOMA.

Age.—Usually occurs later in life, after 35 years. There are recorded cases occurring at 18 years of age. These are rare.

Heredit.—Usually history of malignant disease of ancestors.

Location.—When confined to cervix, most frequently found at the site of a previous laceration.

Frequency.—Not of rare occurrence. Married women and those having borne children suffer oftenest.

Development.—Usually slow at first. Begins as a hard elevation or nodule.

Number.—At first a simple ulcer until the glandular tissue breaks down, forming another.

Auto-inoculation.—Questionable.

Color.—Dirty, with livid edges covered over with broken-down tissue. Discharging a fetid, ichorous fluid, very irritating.

Hydorrhœa.—Hæmorrhage.

No tendency to cicatrization.

Extends in direction of vagina and body of uterus.

Buboes.—Late. Multiple enlargement of glands.

Microscope.—Shows presence of epithelial scales in so-called nests.

Cachexia.—Marked late in disease.

CHANCROID.

Occurs usually early, but may be observed in the old.

Plays no part.

On lower fourth of vagina and sometimes on cervix.

Rare. Prostitutes, or married women who become infected by their husbands, are affected.

Rapid. Begins as a pustule, rapidly becoming an ulcer.

May be single at first, but rapidly becomes multiple.

Auto-inoculable. Producing characteristic chancroid.

Yellow, tawny, and discharging a yellow pus.

No hydorrhœa; little hæmorrhage.

Evidences of cicatrization.

On vaginal and cervical surface.

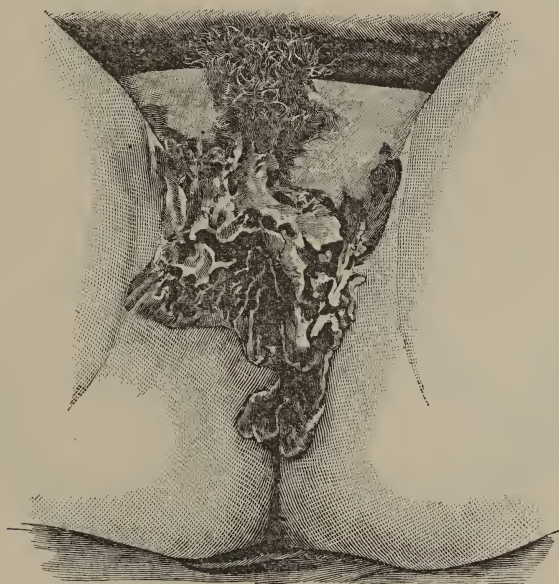
Occur early and suppurate, as a rule. Usually single.

Absence of this.

Usually absent.

Tumors.—Under the title of "Some Unusual New Growths of the Vulva," R. W. Taylor⁵_{Jan., '94} describes three cases of syphilitic neoplasms. The first patient presented upon the vulva a maroon-colored, flat, new growth, extending to the pubes and right inguinal region and encircling the anus. There were no traces of labia, large or small; the clitoris was represented by a central mass of cicatricial tissue, and the introitus vaginæ resembled a ragged slit. The perineum was also invaded. In no place was there evidence of tumor-like formation, as the new growth

was everywhere developed *en surface*. (See illustration.) Its surface was maroon or chocolate colored, with considerable glossiness. At times this morbid surface was entirely dry, and at others it gave issue to a thin, scanty, reddish serum. There were no evidences of ulceration, and, though the process lasted many years, it did not seem to involve the contiguous lymphatic system. There was an entire absence of erythematous and erysipelatous complications. Finally, the parts became swollen, contracted, and excoriated (see illustration on next page), and the patient eventually died, after



SYPHILITIC GROWTH OF VULVA. (TAYLOR.)

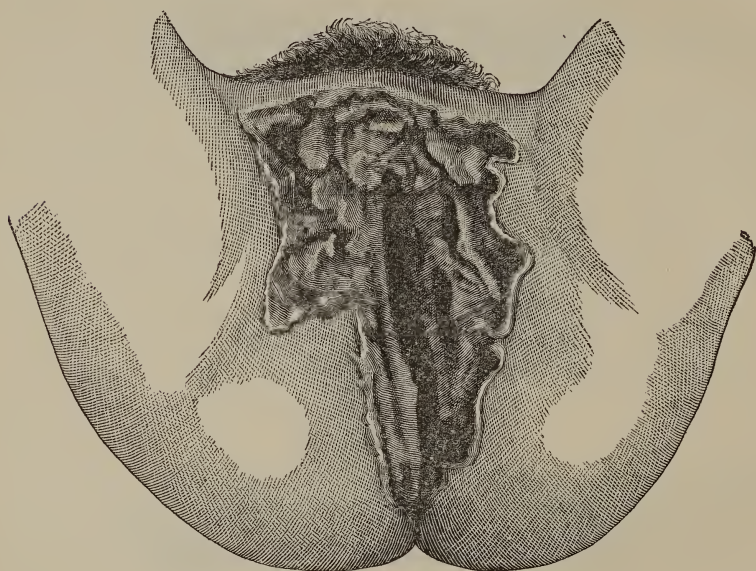
The new growth in period of full development.

American Journal of the Medical Sciences.

intense suffering. The second and third cases recovered; the second closely resembled the first in its clinical manifestations, but promptly yielded to applications of mercurial ointment. The third case presented a tumor-like formation. Roberts²²⁴_{Feb. 24, '94} and Reverdin¹⁹⁷_{Aug. 20, '94} report instances of fibromata of the labia majora. Reverdin's case was an encapsulated fibromyoma of regular form and soft, elastic consistency, jutting from the left labium; it was successfully removed. The tumor in Roberts's case had attained the size of a cocoa-nut and was so heavy that it was kept suspended in a sling; it weighed 3 pounds (1500 grammes).

Mauclore⁴⁸_{Dec., '92}²_{Feb., '94} has published an important monograph on the well-known pedunculated polyp, or *molluscum pendulum*, of the vulva. The disease is a true fibroma of the dermis. In molluscum the elements of the dermis at the affected spot hypertrophy in due proportion. Thus, in the skin of the thigh, where fibrous tissue is abundant, molluscous tumors contain much fibrous tissue. When the labium majus is affected, since it leaves a layer of dartos, much muscular tissue is found in the new growth.

Mauclore notes the important fact that, while the pendulous



SYPHILITIC GROWTH OF VULVA. (TAYLOR.)

The condition of the genitals three months before death.

American Journal of the Medical Sciences.

vulvar tumor is often solitary, it is not rarely associated with the most characteristic sessile molluscum either in the neighborhood or diffused over the entire body. One of the largest of these vulvar tumors reached as low as the inner condyle of the femur, being thirteen inches in vertical measurement and twenty-five and one-half inches in diameter. Though known to be essentially innocent, as a rule, these pendulous tumors may become sarcomatous. Removal is the sole treatment

Cavernous tumors (*nævi*) of the vulva have been encountered by Eichholz³⁵⁴_{Dec., '92} and by Allen.²⁴⁵_{Aug., '94} Eichholz's case involved the

entire left labium majus, which was converted into a tumor over four inches long and two broad; it extended to the perineum and anus and the posterior part of the right labium. Allen's case was in a child aged 4 months. The nævus had ulcerated, the lesion being situated in the lower half of the right labium majus; it was crater-shaped, with an uneven base, and covered with a dirty, sloughing membrane. Under electrolysis the ulcer decreased in size. According to Fordyce²⁴⁵_{Aug., '94} the thermo-cautery is necessary to destroy these nævi. A myxomatous tumor springing from the left labium majus, with a long pedicle reaching to the knee, is reported by Kortright.¹⁵⁷_{Apr., '94} He also reports an epithelioma of the vulva in a woman 64 years of age. Tumors of the labium minus are rare. Kirchoff³¹⁷_{No. 45, '93} reports a case of fibroid tumor arising from the left nympha. It was expelled from the vulva while the patient, a young girl of 18, was lifting a weight; it was composed of a conglomeration of spherical, fibrous bodies; the surface was smooth; both tumor and pedicle were œdematous, and in parts ulcerated. Thomas¹⁸⁷_{July, '94} has observed a fibroma of the left labium majus. Schweitzer⁹⁵_{B. 44, H. 2} reports a case of primary carcinomatous involvement of the right Bartholin's gland, and Kelly⁸⁵⁸_{V. 3, Nos. 7-9, '94} removed a lipoma from the right labium majus.

Currier¹³²_{June, '94} met with a syphilitic growth of the right nympha in a *puella publica* 22 years of age; the growth had attained the dimensions of a good-sized apple. Under appropriate anti-syphilitic treatment it diminished somewhat in size.

Fourchette.—Hadra²⁰¹³_{May 2-5, '93} contributes an article on the pathology of the fourchette. He attributes much of the suffering experienced by women in coitus to an abnormal development of the frænum, which forms a large fold, in which the male organ becomes caught. Undue sensitiveness of the fourchette is especially common, even in the virgin. He considers the posterior commissure as the most sensitive portion of the female genital organs. This sensitiveness can be increased by the presence of cracks and excoriations. In mild cases of hyperæsthesia, applications of cocaine, belladonna, or of antiseptic washes may suffice. In the graver cases a discission, a cut through the median line of the fold, is demanded. Mere stretching will not always answer. If ulcers or fissures are present they should be cut through.

VAGINA.

Vaginal Secretion and Bacteriology.—Gow²_{Jan. 18, '94} has proven rather conclusively that the vagina normally secretes a whitish and opaque substance resembling in appearance thick, starchy mucilage; its opacity is due to the presence in it of numerous flat, nucleolated cells; chemically, the fluid is albuminous in nature, and there is no evidence of the presence of mucin; the reaction is acid, but the fluid when secreted is alkaline, the acidity depending upon decomposition from the presence of bacteria. Many experiments have proved the existence of bacteria in the healthy vagina, though no suggestion has been made that such bacteria are pathogenic. Stroganoff⁴⁸_{Mar., '94} has made a complete study of this subject, as well from an historical and bibliographical as from an experimental point of view. By experiments upon rabbits he has attempted to prove the hypothesis of Döderlein to explain the rarity of microbes in the uterine neck. He has examined the vaginal mucus of 43 infants. In 14 cases, after the first bath and from five minutes to five hours after birth; of these cases the mucus was sterile nine times; in the other 5 cases microbes were present in small quantity. In 5 cases the examination was made before the bath, but from fifteen to twenty-eight hours after birth, the microbes being more frequent and numerous. In 6 cases examination was made after the bath with oily inunction of the body; in this group but few microbes were found upon the plates, but abundant cultures were made. In 19 cases examination was made from one to eight days after birth, and in 2 cases only was there complete absence of microbes. Stroganoff has also investigated the influence of menstruation upon the microbes in the vagina and cervix, and, in order to approach as nearly as possible to the conditions that gynæcologists encounter clinically, he chose women suffering from various affections (ovarian cysts, parametritis, etc.), but with but slight lesions of the mucosa. He concluded that: 1. The vagina constitutes an unfavorable site for pathogenic microbes, particularly for the staphylococcus and the streptococcus; this is due to the action of the secretions of the habitual (non-pathogenic) microbes of the vagina. 2. The cervix is equally unfavorable to the development of pathogenic microbes. 3. Everything indicates that the vaginal mucus acts only upon the vegetable forms, and not upon the spores. The menstrual blood

and lochia act in the same way. 4. The employment of antiseptic agents is useless, to say the least, after a normal accouchement. 5. The question of the normal vaginal flora is still too obscure to authorize conclusions. 6. In the rabbit, cultures of staphylococcus and of streptococcus are more or less rapidly destroyed. 7. Normally, save in very rare exceptions, microbes do not exist in the cervix. Will ²⁰²_{Jan. 10, '94} mentions, among the most prominent bacteria found in the vagina, the bacillus vaginæ, which has not been demonstrated to assume pathological functions under any circumstances; it probably ranks in some measure with the semi-independent organisms of the economy engaged in its secretory and other protective functions; its product of lactic acid induces the normal reaction of the vaginal mucus. Abnormal, or what Döderlein calls pathological, vaginal secretion is usually yellow in color; creamy in consistence; either feebly acid, neutral, or alkaline in reaction; deficient in these bacilli, and characterized by a thick, tenacious, yellow mucus. He is convinced that the greater proportion of all chronic inflammatory diseases of the female genital tract are due to the gonorrhœal contagium.

Vaginismus.—According to L. Grant Baldwin, ¹⁵⁷_{Dec., '93} the term *vaginismus* should be restricted to that condition of spasmodic contraction of the muscles surrounding the entrance to the vagina which precludes the possibility of or renders coition painful, and should not be applied to the rarer condition in which entrance to the vagina can be effected, the spasm coming later and rendering withdrawal difficult or impossible; a few well-authenticated cases of this latter condition are reported. Among the etiological factors, Skene ¹⁵⁷_{Dec., '93} considers that certain affections of the hymen, such as inflammation, hypertrophy limited to the epithelial layer, congestion and thickening, with hyperæsthesia of the structure, will be generally found to co-exist with the vaginismus. He also believes that rectal disease will contribute to its production. T. More-Madden observes ²⁶_{Sept., '94} that the general causes may be traced primarily to the almost invariably neurotic or hysterical temperament of the subject; and, secondarily, to the existence in these cases of a specific abnormal condition or neuritis of the pudic nerve, one branch of which supplies the clitoris, while the other is distributed to the labia and perineum. In the treatment of vaginismus Baldwin prefers Skene's method of excision of the hymen, with careful coaptation

of the cut edges of the mucous membrane. In those cases resulting from muscular ankylosis of the pelvic floor, he has obtained good results from stretching the muscles, under anæsthesia. More-Madden²⁶_{Sept., '94} would allay the general neurotic condition by the use of constitutional nerve sedatives and tonics, and apply local nerve-stretching to the affected parts, which may be accomplished by introducing a large-sized bivalve vaginal speculum, and forcibly withdrawing it while widely expanded. This procedure may be repeated at the expiration of a week's time, if the vaginismus persist. Pozzi suggests⁵_{Sept., '94} the following operation for the relief of vaginismus: The hymen is incised with scissors, and the vulva forcibly dilated with an anal speculum. A lateral incision is then made, about one and one-half inches long, from right to left, at the junction of the lower and middle thirds of the vulvar orifice, extending a little below the line of insertion of the hymen, and forming a cross with it. The fibres of the constrictor cunni are exposed and their superficial bundles divided. The flaps are then dissected up, forming an elongated, lozenge-shaped wound, with its long axis parallel with the edge of the vulva. This is closed as in Tait's perineal operation. This operation is contra-indicated when the vaginal spasm is reflex, symptomatic of a more remote genital affection. In local medication Lutaud⁸⁰_{Apr. 16, '94} recommends copious injections of mild, antiseptic, non-irritant lotions, with painting of the vulva and vaginal introitus with a 5-per-cent. solution of cocaine. At sexual intercourse the parts should be thoroughly lubricated. Cornell²⁸²_{June, '94} reports an interesting case of so-called vaginal neurosis, in which there existed throughout the vaginal mucosa sensitive areas of blushing, alternating with pallor and normal hue; the sensitiveness was so extreme that coition was impossible. Under constitutional remedies and vaginal astringents a cure followed.

Vaginitis.—An interesting case of membranous vaginitis is reported by Griffiths.²_{June 16, '94} The patient was a frail woman, 39 years of age, who had presented a normal menstrual history until she was 26 years of age; at that time the catamenia became irregular, and during and between the menstrual periods shreds of membranous tissue began to be discharged; they were most abundant with the menses, and their discharge was accompanied with stinging, smarting, and heavy, shooting pain. The patches on the vaginal wall closely resembled patches of diphtheritic mem-

brane without surrounding signs of inflammation. When detached they left a slightly-reddened, but unbroken, surface. A curious complication was the co-existence of a membranous enteritis. The only drug that seemed to exert a beneficial effect was arsenic, which was pushed to its physiological limit for considerable periods, the membranes diminishing in size and number during its administration.

J. D. Williams ²²_{Sept. 5, '94} reports two cases of undoubted tubercular disease of the vaginal portion of the cervix uteri. In both cases the cervix was the seat of ulcerous formations, which, under microscopical examination, revealed tubercle follicles and bacilli. The disease was limited to the vaginal portion of the cervix uteri and the adjoining vaginal mucous membrane, with non-involvement of the rest of the generative tract. There was extensive pulmonary tuberculous disease. Zweighbaum has noted twenty-nine cases of tubercle of the cervix, three of which were cases of primary disease. The period at which cervical tuberculosis prevails mostly is the period of maximum sexual activity,—between the ages of 20 and 40 years. Upon removal the disease has a tendency to recur.

Under the title *perivaginitis simplex*, Maher ⁵⁹_{Mar. 31, '94} describes a new disease of the vagina. The latter organ was converted into a rigid, open tube, its mucosa, however, appearing to be in a normal condition. There was a brawny induration of the perineum. On attempting to sit, the patient experienced the sensation of a hard body in the vagina. The rectum was inflamed and was the seat of a faecal impaction which emitted a foul odor. Maher considers the patent condition of the vaginal canal as a pathognomonic sign of perivaginitis. The treatment consists in removing the source of irritation and in thorough asepsis with the use of glyceroles of boric acid.

Gonorrhœal vaginitis, as usual, has commanded the attention of many writers. Carry ²³⁶_{June, '94} urges the importance of a careful microscopical examination in every case of purulent leucorrhœa, to detect the gonococcus of Neisser if present, and thus prevent the farther spread of the disease. He claims that its habitual seat is the urethra, but that it may be found in the uterine cervix, the periurethral follicles, the glands of Bartholin, the vagina, and, exceptionally, the anus. It is the gonorrhœal urethritis of the woman that nearly always engenders the gonorrhœa of man. Touton ⁴_{Apr. 30, '94}

has found the entire tissue of the glands of Bartholin infiltrated with the gonococcus. In a contribution to the prophylaxis of female gonorrhœa, d'Aulnay ²³⁶_{May, '94} urges the importance of an early detection of the disease in order that it may, if possible, be confined to the urethral mucous membrane, and the disastrous sequelæ—salpingitis and other pelvic diseases—be prevented. Sexual hygiene, to be effective, requires close attention to cleanliness; frequent vaginal injections are imperative. The young prostitute is more dangerous than the older, for the reason that she is ignorant of prophylaxis, has frequent coitus, and the introitus vaginæ is firmer and more resistant, and hence more liable to produce abrasions of the dermal investment of the penis. Geddie ²_{Feb. 24, '94} reports two cases of gonorrhœal infection in one family following the use of the same towel. In the treatment of the disease d'Aulnay ²³_{June, '94} advocates the use of the following solution: Methylene-blue, 10 grammes ($2\frac{1}{2}$ drachms); alcohol, 15 grammes ($3\frac{1}{4}$ fluidrachms); potassium, 0.20 gramme (3 grains); water, 200 grammes ($6\frac{1}{2}$ fluidounces). Tampons of cotton saturated with this solution are to be introduced into the posterior vaginal fornix after antiseptic washing. The dressing is left for two days and then substituted by glycerin tampons. Colombini ¹²⁶_{Apr. 15, '94} has had excellent results from the use of ichthyol in 8-per-cent. solution. Schmidt notes ¹⁰⁰_{May 17, '94} the curative action of erysipelas upon gonorrhœa, as illustrated in a little girl of 3 years, who presented an acute gonorrhœa of four days' standing, on entrance into the hospital; on the sixth day an erysipelas developed on the left thigh and was promptly followed by disappearance of the gonorrhœal symptoms.

Vulvo-vaginitis.—Cassel ⁴_{Dec. 20, '93} points out that the vulvo-vaginitis of young children is generally a true infective gonorrhœa in which the gonococci can be found. The method of direct infection was frequently made out, but the hymen was invariably uninjured. In most of the cases the infection was conveyed by soiled linen. The treatment consists in the injection of medicated solutions, 1 to 2 per 1000 solution of sublimate, later 1 to $1\frac{1}{2}$ per 1000 silver nitrate, with frequent washings of the external genitals. In many cases Dind ¹⁹⁷_{July 20, '94} insists that the uterine cavity participates in the inflammation. The great importance of the disease lies, according to Rocaz, ⁴⁹_{Feb., '94} in the complications attending it. These are ulceration of the labia, abscess of Bartholin's glands, conjunc-

tivitis (produced by inoculation with the child's fingers), arthropathies (probably allied to, if not identical with, those of gonorrhœal origin), purulent otitis, and peritonitis; in addition to these the general health of the child may seriously suffer. Rocaz thinks that many cases of metritis in virgins may be accounted for by a latent vaginitis, contracted in childhood and taking an active form at puberty, as soon as the uterus becomes functional. In the treatment he regards merely vulvar applications as useless; irrigation of the vagina is the only rational treatment, the best vaginal antiseptic being perchloride of mercury; its effects, however, are not lasting, and it may cause much irritation; he strongly recommends potassium permanganate in a 1 to 4000 solution, injecting about a pint ($\frac{1}{2}$ litre) three times a week. After a few injections he gradually increases the strength up to 1 to 250. A cure may be relied on in from two to four weeks; hot baths should be given in the intervals of the irrigations. Haushalter¹⁸⁴ No. 6, '94 reports a cystitis due to the colon bacillus in the course of vulvo-vaginitis in a child of 6 years. Under a milk diet, rest in bed, and salol administered internally a cure resulted in three weeks.

Atresia Vaginæ.—Cases of congenital atresia are reported by Wathen,²²⁴ June 30, '94 Skene,¹⁵⁷ Oct., '93 Verchère,²³⁶ June, '94 Cowles,⁴⁴ Dec., '98 Russell,¹⁹⁹ Mar., '9 Simon,¹³² Apr., '94 Frank,³¹⁷ No. 36, '93 Ostermann,¹⁰⁰ July 26, '94 and Gottschalk,³¹⁷ May 26, '94; of acquired atresia, by Kelly,⁸⁵⁸ V. 3, Nos. 7-9, '94 Kingman,⁹⁹ Dec. 21, '93 and Rosciszewski.³¹⁷ July 7, '94 Ostermann's case was an annular constriction constituting an obstruction to labor; an incision was made and an instrumental accouchement successfully accomplished. Wathen remarks that it is not a very uncommon thing to see acquired atresia of the vagina resulting from specific infection, from infection following childbirth, from infection of measles, small-pox, or even diphtheria. The varieties are manifold: there may be an absence of the upper, middle, or lower third of the vagina, but very seldom is there absence of the middle of the vagina with the upper and lower thirds existing; the vagina may be absent and the uterus fully developed; or the vagina may be absent and the uterus apparently absent. With entire absence of the vagina, with the presence of the uterus and ovaries well developed, the better treatment is to remove both the uterus and the ovaries; attempts to restore the vagina in these cases usually result in nothing more than a fistulous tract. When there is an accumu-

lation of menstrual fluid, Skene relies upon the slow method of evacuation through a very small puncture in the imperforate hymen, or through the diaphragm in the vagina. The methods of dealing with the retained fluid are: the immediate one of Dupuytren so successfully practiced by Emmet, by which all obstructions are cut or torn away at a single operation and all the accumulations washed away with hot water; and the gradual one of Amussat, by which a canal is excavated by repeated efforts of pressure and incision; also, by the small valvular slit and gradual seepage, as done in imperforate hymen with retention. Puncture through the rectum has been practiced by Oldham, West, and others, but would hardly commend itself to one in these days of enlightened antisepsis. Max Frank³¹⁷_{No. 36, '93} records a case of pyokolpos in a congenitally-closed vagina; Fest¹⁵⁰_{Apr., '94} reports three cases and Heydenreich³_{Feb. 21, '94} two of hæmatokolpos.

Double Vagina.—Interesting examples of double vagina are recorded by Herrick,⁹_{July 7, '94} Reid,²¹³_{July, '94} Cepinsky,³¹⁷_{No. 33, '93} and Robb.¹_{Sept. 1, '94} In Robb's case the smaller of the two canals was disposed laterally, terminated in a blind sac, was not connected at all with the uterus, and was not associated with any malformation of that organ. Regarding its origin, the points named might be adduced as evidence that it originated from the third portion of the Wolffian duct, which runs down the lateral wall of the vagina and sometimes persists; but, on account of its size, Robb inclines to the view that the case represents a somewhat unusual double vagina from non-coalescence of the lower third portions of the Müllerian ducts. Cepinsky's case was accompanied by the condition of uterus subseptus.

Cysts of the Vagina.—Rendu²¹¹_{Feb. 11, '94} remarks that, since anatomists do not describe glands in the vaginal mucosa, divers theories may be advanced to explain the pathogenesis of cysts discovered in that canal. Their presence is variously ascribed to lymphatic ectasia, to vestiges of the canal of Wolff, to persistence of Müller's ducts, and, finally, to an obliteration of the crypts or lacunæ, at the base of which epithelium at first and finally a liquid collection accumulate.

Tumors.—Braithwaite²_{June 16, '94} presented, before the Obstetrical Society of London, a case of adenoma of the portio vaginalis uteri, forming a depressed sore or ulcer. As a primary disease, epithe-

lioma of the vagina is rarely seen. Oliver ⁶_{Aug. 4, '94} has encountered two cases in both of which not only were the inguinal glands infected, but it was the inguinal growths that caused the patients to seek advice. Regarding the lymphatics of the vagina, practically nothing is known; but it is remarkable that in these two cases the enlargement of the inguinal glands was first observed on the left side. Wernitz ³¹⁷_{June 30, '94} reports a fibromyoma of the vagina in a woman 49 years old, and also a spindle-celled fibrosarcoma of the left labium majus in a woman 44 years of age. Gatti ³³⁶_{Sept. 1, '94} encountered a primary sarcoma of the vagina in a woman of 34 years. Under the title of "Destructive Ulceration of the Vagina," Braithwaite ⁶_{July 21, '94} describes two forms of extensive vaginal ulceration, both intractable in their nature, but non-malignant, and without connection with corroding ulcer or with any of the so-called lupoid forms of disease, as they are both unattended with any up-growth or hypertrophy. The first form was confined to the lower part of the vagina, the mucous surface of which was destroyed completely on its posterior surface. The second form was confined to the upper part or roof of the vagina, and was more superficial, but very chronic. Braithwaite thinks there can be little doubt that both were produced by cocci or bacteria acting on tissues enfeebled by years of poor health.

Vaginal Enterocoele.—Three cases of this rare condition have been reported during the year,—one by Eberhart, ³¹⁷_{June 16, '94} one by Daigle, ¹²²_{July, '94} and one by Reid ²¹³_{July, '94}; all were relieved by operation. Étienne ³¹_{Sept. 5, '94} observed a vaginal urethrocele in a woman, aged 48, who had given birth to two children. The affection began with difficulty of micturition, followed by painful crises; the case was cured by a simple incision with a bistoury. As regards pathogenesis there are two theories,—a traumatic and a cystic origin.

Varicocele.—Chéron ⁵_{Sept., '94} describes under this term a varicose condition of the veins in the recto-vaginal septum, recognized as a hard, sensitive, elongated swelling, which may extend from the posterior fornix as far down as the lower third of the vagina. It is often associated with hæmorrhoids, both being due to obstruction of the intra-pelvic veins, caused by various affections. Lumbar neuralgia is one of the accompanying symptoms. Aside from the removal of the cause, Chéron advises massage of the swelling and steady pressure exerted from below upward.

Gangrene.—Nammack ¹_{Aug. 26, '94} reports a case of vaginal gangrene following the introduction of tampons saturated with the tincture of the chloride of iron. To prevent stenosis from cicatricial contraction, the vaginal glass plug was used.

Foreign Bodies.—The vagina still continues to act as a receptacle for curious articles of diverse description. Haverkamp ¹³²_{May, '94} removed the bowl of a pipe from the vagina of a woman who had carried it there for over ten years. Brouardel ¹⁴_{Feb. 14, '94} discovered a wooden plug in the vagina of a young girl of Annam, and removed it with difficulty.

Prolapse of the Vaginal Walls; Colporrhaphy.—Truzzi ⁴⁸_{May, June, '94} considers an expedient in the repair of vaginal prolapse which may give more resistance to the tissues, especially in those cases

in which the pelvic floor, having lost all tonicity from atrophy of the muscles, is fatally disposed to relaxation. In order to secure increased resistance of the tissues, he believes it useful to practice, in colporrhaphy for prolapse, the transplantation of decalcified bone into the denuded wound; this by its presence provokes the formation of a

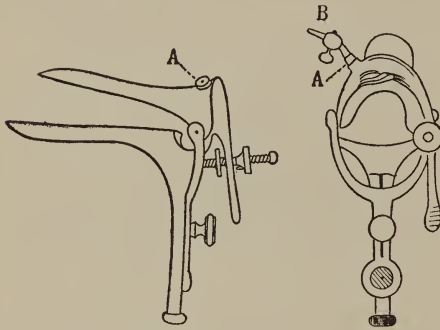


FIG. 1.

FIG. 2.

VAGINAL SPECULUM. (HERZFELD.)
Medical Record.

fibrous tissue, which is resistant, and which, without any damage to the function of the vaginal canal, may serve to re-inforce the work of sustaining the *columnæ rugarum*. He employs the diaphysis of the femur or humerus of a rabbit, or the diaphysis of the tibia of a foetus at term accidentally killed during labor. These are placed in a solution of HCl (10 to 100) until completely decalcified. The denudation being made, the bony plate is placed in the middle and deepest portion of the wound, and sutures are applied in the ordinary way. In the operation of colporrhaphy Petit and Bonnet ⁵⁵_{Jan. 27, '94} prefer catgut sutures to those of silk-worm gut. Bumm ³¹⁷_{July 21, '94} has noted two cases of pulmonary embolus following an operation upon the recto-vaginal septum.

Instruments.—Herzfeld ⁵⁹_{Mar. 10, '94} has devised a new vaginal specu-

lum with constant irrigation, employing for the purpose a bivalve speculum which can be converted into a single-blade speculum, and in both of which positions irrigation can be obtained. The instrument is constructed on the plan of the Graves speculum. The upper blade is the one through which the irrigating fluid passes, this blade being double; at its point there is a narrow, slit-like opening for the discharge of the irrigating fluid, which enters the upper blade through a stop-cock (Fig. 2, *B*) attached to it by means of a bayonet-lock (Fig. 2, *A*). The amount of fluid entering is regulated by the stop-cock. The lower blade is 0.5 centimetre longer than the upper blade, and on it the irrigating fluid collects and is carried away through a tube which represents the handle of the instrument. To avoid overflow of the liquid on entering this tube, a plate is attached behind the inlet of the tube (Fig. 2), in front of which the liquid collects. (See illustration.)

BLADDER.

Vesical Exploration.—At a meeting of the Johns Hopkins Hospital Medical Society, Kelly ⁷⁶⁴_{Jan., Feb., '94} alluded briefly to the history of vesical examination in the woman, and dwelt especially upon his method of direct exploration of that viscus with catheterization of the ureters. He claims that the method devised by him is a decided advance in cystoscopy, as the instruments required are very simple, inexpensive, and easily manipulated. The only instruments necessary are the Nos. 8 to 14 dilators and Nos. 10 to 13 specula, with their obturators; a simple suction apparatus; a ureteral catheter; a ureteral searcher; long, delicate forceps for carrying pledgets of cotton into the bladder; and small pledgets of cotton. To properly illuminate the interior of the bladder a head-mirror and good light are required. The success of this examination largely depends upon the posture of the patient. She is placed in the dorsal decubitus, with the hips elevated upon cushions from eighteen to thirty centimetres above the table, which causes the bladder to distend with air. After dilatation of the urethra the urine is removed with the suction apparatus and the pledgets of cotton; then, by inclining the speculum to one side or the other, about thirty degrees from the median line of the body, the ureteral orifices are usually easily found. The entire bladder-wall may readily be inspected, and isolated areas of ulceration,

tuberculosis, or any macroscopical lesion of the bladder be discovered. An anæsthetic other than possibly cocaine is not needed, save in nervous women. Brewis³⁶_{Sept., '94} considers that Kelly's method of vesical exploration inaugurates a new epoch in the investigation of vesical and urethral affections, only second in importance to that which followed the introduction of Sims's speculum in vaginal and uterine examinations.

Irritable Bladder.—Zuckerkan¹¹³_{No. 20, '94} calls our attention to an hitherto-undescribed form of irritable bladder, produced by hyperæmia of the organ, dependent upon either a physiological or pathological congestion of the genital apparatus (coitus, menstruation, pregnancy). If this congestion be much protracted, catarrh of the vesical mucous membrane is produced. According to Heitzmann¹⁶⁹_{May, June, '94} vesical neuroses are frequently the outcome of certain diseased conditions of the bladder-walls or of the urinary excretion. Especially does the organ become more irritable at the periods of puberty and the menopause and during the menstrual epochs. The female urethra is very commonly at its external orifice, seldom at its internal orifice, the seat of a neurosis; fissure of the urethra at the vesical orifice is usually productive of vesical irritability. Ectropion of the urethral mucous membrane and prolapsus may contribute to its production; excrescences at the orifice of the urethra and throughout its course, polypi, caruncle, stricture; uterine anomalies such as retrodisplacement, anterior displacement, or prolapse; ovarian and tubal tumors,—all must be looked for in intractable cases of vesical irritation.

Enuresis.—In the treatment of urinary incontinence, Narich, of Smyrna⁴⁸_{Aug., '94} recommends massage, modifying somewhat the procedure of Brandt. He thinks it unnecessary to hold with the free hand the wrist of the massaging hand in the suppression of the vibrations, as advised by Brandt; massage is thus made only upon the vesical sphincter. Gersuny's¹_{June 2, '94} operation for incontinence of urine in women consists in freeing the anterior portion of the mucous membrane of the urethra from the surrounding parts by an incision, twisting it more or less and fixing it in this twisted condition by means of suture. Hofm⁸_{May 10, '94} performed this operation on a woman 27 years of age, twisting the urethra to the extent of 180 degrees; perfect cure followed. Von Frisch thinks the good effect of the operation is apt to be only temporary. Frank³¹⁷_{No. 16, '94}

describes the following successful operation for incontinence following parturition, presumably due to retroflexion with fixation: The anterior vaginal wall was incised from a point just opposite the beginning of the urethra, as high as the portio, and the posterior wall of the bladder was dissected away. A fold was turned into the bladder so as to form a valve over the vesical opening, and this was secured with catgut sutures. A cicatricial band, which extended across the vesico-uterine pouch, had previously been divided, and, in order to prevent its reformation, a vaginal flap was brought over and sutured in its place. After the third day the patient was able to pass her urine naturally, and the incontinence was permanently relieved. Schultze³¹⁷_{No.17,'94} advocates the following operation, which he has performed successfully in a patient with incontinence due to laceration and fistula of the urethra: A denudation in the shape of a horseshoe was made, including the fistula and extending as high as the neck of the bladder; the apposed surface was united with numerous sutures of silk-worm gut; a catheter was left in the bladder for nine days, at the end of which time the sutures were removed. There was perfect retentive power. The bladder being much contracted, its capacity was increased by hydrostatic pressure from 4 to 6 ounces (124 to 186 cubic centimetres).

Cystitis.—According to Lutaud,²⁴_{July 22,'94} the first indication in the treatment of acute cystitis is to allay tenesmus and pain; the medication should be local, opium and belladonna per rectum being preferred. He employs the following suppository: Morphine hydrochlorate, cocaine hydrochlorate, each 0.01 gramme ($\frac{1}{8}$ grain); extract of belladonna, 0.005 gramme ($\frac{1}{12}$ minim); cocoa-butter, 3 grammes (46 grains). One of these should be used every fourth hour until the pain and tenesmus have disappeared. Henbane may be substituted for belladonna when morphine or opiates are badly tolerated. Laudanum lotions are of service. An hypodermatic injection of 0.01 gramme ($\frac{1}{8}$ grain) of morphine will always allay the pain. Topical applications and calmants may also be employed in the vagina; Lutaud prefers this method because it combats the cystitis of the neck. He employs belladonna or cocaine: Camphorated lanolin, 30 grammes (1 ounce); extract of belladonna, 2 grammes (31 minims). He has seen the painful phenomena ameliorated by the prolonged employment of the

following mixture: Oxalic acid, 0.50 gramme ($7\frac{3}{4}$ grains); distilled water, 100 grammes ($3\frac{1}{4}$ fluidounces); syrup of bitter orange-peel, 30 grammes (1 fluidounce). Of this a dessertspoonful is to be taken every four hours. In the chronic period of the disease he employs both local and general medication. When the pain has diminished, intra-vesical medication and lavage may be resorted to. Slightly-antiseptic solutions are to be preferred, such as boric acid, 40 grammes ($1\frac{1}{4}$ ounces); sodium biborate, 5 grammes ($1\frac{1}{4}$ drachms); distilled water, 1 litre (quart). Silver-nitrate injections are only rarely required. The boric-acid wash, as just given, may be followed by an injection of 150 grammes (5 ounces) of water containing a teaspoonful of the following emulsion: Pulverized iodoform, 30 grammes (1 ounce); glycerin, 40 grammes ($1\frac{1}{4}$ fluidounces); distilled water, 20 grammes (5 fluidrachms); gum tragacanth, 0.25 gramme (4 grains). Pyoktanin-blue, as recommended by Nencki, he employs only in chronic cases, using 1 gramme ($15\frac{1}{2}$ grains) of the blue to 1 litre (quart) of distilled and boiled water; an injection is given night and morning for ten or fifteen days. He employs pichi internally thus: Extract of pichi, 10 grammes ($2\frac{1}{2}$ fluidrachms); tincture of cannabis Indica, 2 grammes (31 minims); lime-water, 90 grammes (3 fluidounces). A dessertspoonful is given every four hours. Another formula contains buchu, with henbane and ammonium bromide. When there is pus in the urine the following formula is employed: Benzoic acid, 1 gramme ($15\frac{1}{2}$ grains); orange-flower water, 50 grammes ($1\frac{1}{2}$ fluidounces); boiled water, 900 grammes (30 fluidounces); sugar, 100 grammes ($3\frac{1}{4}$ ounces). A glassful is taken between meals.

Tuberculosis.—Bardenheuer ³¹⁷_{No. 14, '94} has, for the third time, dissected away the entire mucous membrane of the bladder in a case of tuberculous disease of that organ. Before the stage of ulceration Cahan observed that the diagnosis of this disease is difficult. Even after the opening of the bladder, in an operation, deposits of tubercle are not readily distinguishable from lymphomata and other multiple tumors. Total excision of the mucosa is necessarily followed by contraction of the bladder and incontinence of urine, even though the epithelium is renewed over small tracts near the ureters and urethra. Frank believes that the mucosa is much more thoroughly renewed; indeed, after so-called total excision

small prolongations of the mucous membrane into the other layers of the bladder remain behind. Thus, renewal of the membrane occurs, just as the endometrium is reproduced after delivery from the utricular glands of the uterus. A case of primary tuberculosis of the female bladder, diagnosed and treated by Kelly's method, is reported by Burrage.⁹⁹ July 26, '94 The patient was a woman, 26 years of age, married seven years and sterile. The deposits of tubercle were on the posterior wall of the bladder, where Fenwick says they always first appear in primary vesical tuberculosis; the symptoms were: frequent micturition, not relieved by rest, as is the case in stone; pain, especially at the end of micturition; and blood in the urine. The object of treatment is to render the urine unirritating, and, if possible, germicidal by means of diet and drugs; to remove mucus and uric-acid deposits by irrigation; to destroy the bacilli by direct application of caustics and germicidal agents; to relieve pain, and to build up the general system. Bromide of potassium, 20 grains (1.3 grammes) every four hours, will relieve the pain.

Tumors.—In the removal of tumors of the female bladder Campbell² Jan. 20, '94 makes the following suggestions: If the tumor have a narrow pedicle, it can generally be readily removed *per urethram*; when a villous tumor has a broad base, this operation is tedious and not satisfactory, while the suprapubic method is severe and does not give very great facilities for manipulation. In such a case the vesico-vaginal septum should be incised to a sufficient degree to admit the left forefinger, which can be used to guide the forceps working through the urethra. In this way any tumor suitable for removal may be quickly, safely, and thoroughly dealt with. The advantage of working through two different openings is great. Barker²² July 4, '94 reports a case of carcinoma occupying the entire posterior vesical surface. Its size prevented its removal.

Calculus.—Cases of vesical calculi are reported by Pratt,²⁶⁷ Sept. 15, '93 Lüscher,²¹⁴ Feb., '94 Prewitt,³⁶⁴ Nov. 1, '93 Oliver,² Apr. 14, '94 and Knauss.¹³³ Feb. 5, '94 The nuclei of these stones were, in Knauss's case, a hair-pin, and in Lüscher's a suture-thread. The remaining cases were phosphatic stones, with uric-acid nuclei. In operating upon the bladder, Harrington⁹⁶ Oct., '93 suggests the feasibility of intra-peritoneal cystotomy. He regards the superiority of the intra-peritoneal over the suprapubic incision as very decided; through the peritoneal incision

the cut edges of the bladder can be drawn up toward the surface, and even outside of the abdominal walls, while the suprapubic incision is necessarily limited in extent, and the control of the bladder is imperfect. Intra-peritoneal cystotomy may be performed for tumors of the bladder, disease of the ureters, calculi of large size, sacculated stone, and enlarged prostate. The abdominal incision should be made from the umbilicus to the pubes, care being taken not to open the prevesical space. After drawing the intestines out of the pelvis an incision is made in the median line of the bladder, beginning an inch from the junction of the abdominal and vesical peritoneum, and extending backward for two or three inches.

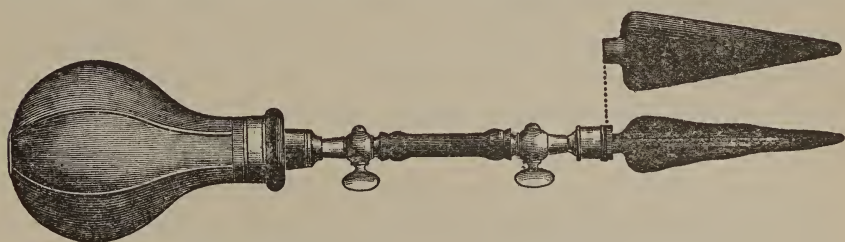
Exstrophy.—Cases are reported by Bitner,³⁶ July, '04 Masland,⁷⁸⁷ July, '04 and Rein,³¹⁷ No. 17, '04. In Masland's case the method of treatment as recommended by Wood, of London, was carried out. His patient was probably the youngest ever operated on for this affection, being but 6 months and 18 days old. Bitner's case was operated on by Krajewski, by Gersuny's method. Rein proposes the following operation for this condition: With the patient in Trendelenburg's posture, a long abdominal incision is made, the uterus and left tube and ovary are pushed aside, and a sound introduced into the left ureter. Another sound is introduced into the rectum and the tips of the two instruments are approximated. An incision is made in the ureter at a point opposite the tip of the sound, and also in the rectum. A glass tube is inserted into the ureter, and to it is attached a piece of rubber tubing, the other end of which is carried through the rectal opening. The corresponding openings in the ureter and rectum are then united by two layers of silk sutures, and the same procedure adopted on the right side. The bladder is extirpated *in toto*, the vesical arteries and their branches ligated, and the abdominal wound closed. The author has performed this operation once with success.

URETHRA.

Anomaly of the Urethra.—Macdonald,³⁶ Feb., '04 reports a case of peculiar abnormality of the urethra and bladder in a girl of 14 years, who suffered from constant dribbling of urine from the time she was 6 months of age. Examination showed, immediately in front of the vagina, a funnel-shaped channel, into which one

finger could be introduced with ease. This gradually narrowed till it entered the bladder by an aperture through which a sound could be passed. Immediately in front of this sinus was a channel that appeared to be the urethra; superiorly it entered the bladder by a small aperture that seemed to possess a sphincter; thence it passed downward for about an inch, and, bifurcating, opened externally as two distinct meatuses, the one in front of the other. The condition was corrected by division of the septum between the bifurcations of the urethra and closure of the lower half of the large channel anterior to the vagina. A perfect cure resulted.

Dilatation of the Urethra.—Cousins ²_{Apr. 7, '94} recommends a new method of dilating the female urethra by means of an elastic air-cushion; there is no risk of injuring the mucous membrane. Dilatation is accomplished by alternate distension and relaxation of the



INSTRUMENT FOR DILATATION OF THE URETHRA. (COUSINS.)

British Medical Journal.

urethral walls. The instrument (see illustration) consists of a metal tube perforated in several places at one end and covered with a conical India-rubber bag. The point of the cushion is made of firm material for the purpose of facilitating introduction into the urethra. The tube is fitted with stop-cocks, and to it the hand-ball is secured by a screw. It can be employed either as an air or water dilator. The empty bag is easily introduced into the urethra, and the dilating process is rapidly performed by intermittent distension of the canal. At any moment, by turning the stop-cock and detaching the hand-ball, the inflated cushion can be left within the urethra.

Urethral Incontinence of Urine.—Schultze ³¹⁷_{No. 17, '94} uses this term to imply incontinence of urine due to insufficiency of the muscular apparatus that closes the bladder. Himmelfarb ³¹⁷_{Feb. 24, '94} reports a case associated with epispadias. Schultze's case was that of a woman,

aged 45 years, whose trouble had dated from a childbirth twenty years previously. The meatus was lacerated, exposing a third of an inch of the urethral mucosa. Behind the meatus was a fistulous orifice, and from it extended upward a long cicatrix with evidences of former sutures. Both cases were cured by appropriate operative procedures.

Urethritis.—According to Verchère,⁴⁸_{Feb., '94} after the uterus the urethra is the most common seat of chronic blennorrhagia in the female. In 434 cases of that affection the vagina was involved 176 times and the urethra 150 times. The disease occupies two distinct seats; the two forms may occur simultaneously or occur singly. True urethritis involves the urethra from its orifice upward, while pre-urethritis is located in the glands that border on the meatus. The latter form has been studied by Guérin, de Sinéty, and especially by Martmeau and his pupils,—Boutin, Guédénéy, Lormand, and Hamonic. It is situated in the small glands described by Astruc. These increase in consistence and become pedunculated; they are then small, rounded bodies, resembling birdshot under the mucosa. Rarely acute, pre-urethral urethritis determines, nevertheless, at the glandular orifice, more or less coloration; the cavity of the gland contains pus, which can be caused to exude by pressure with the fingers. Pre-urethritis is essentially chronic in its course, and does not give rise to any symptoms. Its usual termination is in abscess of the gland; more rarely a folliculo-vestibular or peri-urethral fistula results, which does not show any tendency to heal and may persist for years. The treatment of pre-urethritis should be radical, namely, destruction of the follicle itself. True urethritis is characterized by a flow of blennorrhagic pus from the urethra; it is essentially chronic in its nature, resulting from a pre-existing acute inflammation. It is usually the result of inoculation, but may be secondary to a vulvitis or to a pre-urethritis. It may involve the whole of the urethral canal or may be limited to special areas. There is thus distinguished an anterior urethritis (the *external urethritis* of Guérin) and a complete urethritis. Anterior urethritis may exist alone, but a posterior urethritis is always accompanied by an anterior. In the latter the blennorrhagic pus is localized in the glandular lacunæ occupying the vestibule of the meatus. The objective symptoms of this form are *nil*. Posterior urethritis reveals itself

by the purulent discharge. Two forms exist: urethritis with simple dilatation of the canal, which may be recognized by pressing upon the lower wall of the urethra, and vaginal urethrocele, in which there is a tumor on the anterior vaginal wall; this is sacculated urethritis. The treatment of this condition should be surgical. Proliferating urethritis is characterized by the production of polypoid tumors throughout the calibre of the urethra, fibrous urethritis by a considerable thickening of the walls of the urethral canal with resulting stricture of the urethra. The best treatment of chronic urethritis is the use of injections of mercuric sublimate, 1 to 1000, with irrigation of the canal. Urethral suppositories of bichloride of mercury may be employed, and in some cases astringent solutions may be injected. Strictures must be cut and dilated. Asch¹⁰⁰_{July 12, '94} believes that good results will follow only when treatment is simultaneously applied to all of the genito-urinary organs. He considers alumnol as the best remedy in the form of the following pomade: Alumnol, 7 grammes ($1\frac{3}{4}$ drachms); lanolin, 100 grammes ($3\frac{1}{4}$ ounces); distilled water and glycerin, each 25 grammes ($6\frac{1}{2}$ fluidrachms). He uses an aqueous solution of alumnol, 10 to 20 parts to 100, for cauterization of the lacunæ and crypts at the urethral orifice.

Suburethral Abscess.—Augagneur²¹²_{Aug. 10, '94} reports three cases of this affection, which so far has been considered very rare, and concludes: 1. That the affection exists rather frequently in women at the genital period. 2. The abscess develops in the thickness of the urethro-vaginal septum and may be revealed partially through the ducts of the glands of the urethra, but not *per vaginam*. 3. The affection is usually chronic,—glandular cysts; it may be evacuated from time to time through the urethra. 4. The probable causes are: repeated and prolonged contusion, childbirth, excessive coitus. 5. There are no subjective symptoms. 6. The treatment in every case should be incision through the vagina. Cullen⁷⁶⁴_{Apr., '94} reports a case in a colored woman 31 years of age.

Urethral Stricture.—This affection is rare in women. Kleinwächter³⁰³_{B. 28, II. 1, '94} reports three new cases. The first was in a multipara, aged 53, who had had dysuria for seven years, and who presented the symptoms of vesical catarrh. The second was a senile stricture in a woman, 56 years old, who could only empty the bladder by strong compression of the hypogastrium. The third case resulted

from a wound of the urethra during childbirth. Kleinwächter admits that gonorrhœa is the most frequent cause of this affection.

Urethral Cystocele.—Pousson¹⁸⁸_{Mar. 25, '94} states that there are seventeen cases of vesical prolapse through the urethra on record. To these he adds another, in a young girl, in which he replaced the parts and secured them by means of catgut sutures, the result being excellent.

Prolapse of the Urethra.—Cases are recorded by Bryant²_{May 12, '94} and Simpson³⁶_{Oct., '93}. Bryant's case was one of extreme prolapse in a child of 6 years. Between the labia a cherry-red, blood-oozing, projecting mass was discovered, about three-quarters of an inch in diameter and of the same elevation, with a more or less central orifice surrounded by folds of congested mucosa. The urethra was replaced, with subsequent cure of the condition. Simpson reports two cases, in women of 52 and 72 years of age. The treatment consisted in the use of the thermo-cautery in both cases.

Caruncle.—Liell¹_{Apr. 14, '94} includes under this term the vascular growths about the meatus urethræ, of soft and spongy texture, irregular in outline, of a granular appearance, and varying in dimensions from a pin's head to a small marble. They are composed principally of very vascular, hypertrophied papillæ, with abundant nerve-supply, and are generally sessile. They are to be found not only along the borders of the meatus, but upon the urethral wall also, and especially in middle-aged married women. Their etiology is obscure, but they are usually associated with other morbid conditions of the genitals. Their removal by dissection is preferable to that by torsion. Cauterization of the wound is necessary.

Montgomery⁸⁰_{Aug. 15, '94} reports a case and urges the importance of rendering the parts thoroughly aseptic. For this purpose he employs a solution of oil of cinnamon 1 to 500, which in this strength has been found by D. Braden Kyle to be a very effective germicide. Kyle's theory is that the oil of cinnamon coagulates or contracts the protoplasmic envelope of the germ, and thus imprisons it in its contracted shell, rendering it inert. Webster⁵⁴⁷_{Mar., '94} treats urethral caruncle by injections of carbolic acid. Twenty drops of a mixture of equal parts of carbolic acid and glycerin may be combined with 80 drops of water for the usual strength of the injection.

Tumors.—Büttner ³⁹³_{V.28,P.1,'94} observed a myoma in a woman, aged 40, married nine years, and sterile. It was the size of a hen's egg, protruding from the vulva. Its pedicle was attached to the anterior part of the urethra at the meatus, which was greatly distorted, forming a semilunar slit nearly two inches wide. The tumor was tough like an ordinary fibroid, and was beginning to ulcerate. Operation was followed by a cure.

Zweifel ³¹⁷_{No.6,'94} extirpated the urethra for carcinoma in a woman 38 years of age. The operation consisted in a circular incision around the urethra, symphysiotomy, and removal of the urethra and clitoris in their entirety, after division of the anterior vaginal wall. An artificial urethra was then constructed from a rubber tube. The patient made a good recovery.

URETER.

Catheterization of the Ureters.—Kelly ⁷⁶⁴_{Nov.,'93} remarks that by the adoption of his method of vesical exploration catheterization of the ureters can be readily performed. The operation consists simply in carrying a straight ureteral catheter, either with or without a handle, down into the orifice and up the ureter for several centimetres. A searcher is first employed to be sure that the opening under inspection is the ureter. This is especially necessary when there is vesical or ureteral disease, for the ureteral orifice is often more or less concealed in such cases.

Ureteritis.—Mann ⁵_{Aug.,'94} calls attention to this disease, frequently overlooked, although very common, and often mistaken for other diseases. There are three points where the calibre of the ureter is diminished: the first, one and one-half to two and one-half inches from the pelvis of the kidney; the second, at the junction of the pelvic and vertical portions; the third, where the ureter curves over the iliac artery. There are seven causes of ureteritis: (1) injuries during childbirth; (2) previous disease of the bladder; (3) gonorrhœa; (4) suppuration of the pelvis of the kidney; (5) pelvic disease, such as pelvic peritonitis, cellulitis, and tumors; (6) abnormal conditions of the urine; (7) tuberculosis. Among the previous bladder diseases may be mentioned certain deformities, such as fissure of the bladder where the ureters are generally dilated; cystitis, late in the disease. Acute septic cystitis may sometimes be conveyed to the ureters. There is a slight swelling of the tubes

and desquamation of the epithelial lining; in the other cases there is a plentiful purulent secretion which indicates an ulcerated or granulating condition of their lining membranes. Sometimes the tube is greatly thickened, even as large as a lead-pencil or larger. The most constant symptom is frequent micturition, which may even become continuous; there is boring pain over the ureters, one or both, the left side being most frequently affected. There may be present symptoms of cystitis or of disease of the kidney. Great depression of spirits is not an uncommon symptom. The disease is usually chronic, lasting years. The treatment is constitutional, local, and surgical. The constitutional treatment involves securing the best possible environment,—out-door air, etc. The diet should be regulated and alcoholic beverages stopped. When the kidneys are not active the hot-air bath may be useful, followed by massage. Alkalies should be employed long and persistently, and the bowels kept acting freely. Locally, the urine may be altered by the use of copaiba and oil of sandalwood and by benzoic acid.

By Kelly's method direct treatment of the ureters by boric acid, silver nitrate, etc., may be instituted. Surgically, in some cases, the continuous *ardor urinæ* may be relieved by establishing a vesico-vaginal fistula.

Uretero-ureteral Anastomosis.—Kelly⁷⁶⁴_{Oct., '93} describes a case of uretero-ureteral anastomosis. While performing hysteromyectomy for myoma uteri in a mulatto, aged 25, a large, flat vessel, one centimetre in diameter, resembling an engorged vein, was exposed on the anterior surface of the lower pelvic mass. On division this proved to be the right ureter enlarged to about four times its normal diameter. After removal of the tumor it was decided to attempt the anastomosis of the divided ends of this ureter. Van Hook's method was followed, which consists in tying the lower end of the ureter, then making a slit into it below the ligature, and invaginating the upper end into the lower through this slit. The patient made an uninterrupted recovery.

Ureteral Calculi.—Cases of this rare condition are reported by Kadian³¹_{Aug. 26, '94} and Whitehead.²_{Jan. 13, '94} Kadian's case died eight hours after nephrotomy. Whitehead removed eleven calculi from the lower end of the ureter by dilating the urethra and the ureteral orifice. Frequency of micturition was the only symptom.

FISTULÆ.

Vesico-Vaginal Fistulæ.—Fistulæ of various kinds have commanded much attention from the operative gynæcologists during the year. Cases are recorded by Tascher, ¹⁹² Mertens, ³⁹³ Rimsch, ¹⁰⁰ Mackenrodt, ³¹⁷ Skinner, ¹⁹⁸ Pollosson, ²¹¹ and Frank. ³¹⁷ The methods of dealing with fistulæ of various sizes are numerous. Corson ⁸¹⁴ has adopted the following simple plan: A small, hollow, rubber ball is cut in half, and the centre of the disc thus obtained is pierced by the small blade of a penknife; through the slit thus made the shank of an ordinary shoe-button is passed, the shank appearing on the convex side of the disc. Through this is passed a strong silk ligature, strong enough to bear considerable traction. The disc is then pared down to a size permitting its passage through the fistula, and giving sufficient margin for traction. It is passed, curled up with the aid of dressing-forceps into the bladder, where it expands. This enables the vaginal wall to be well drawn down within easy reach of any operative measure. Through the counter-pressure of the disc the paring of the edges of the fistula is greatly facilitated. When all the sutures are placed, they can be drawn aside and the disc drawn through the pared fistula. McLean ² has devised a simple contrivance for steadying the wall of the bladder in the operation for vesico-vaginal fistula. It is particularly serviceable in cases where the upper vesical walls protrude through the fistula. Eight or ten inches of rubber tubing are attached by a short glass connecting-tube to an ordinary toy balloon. The latter is passed, when collapsed, through the fistula into the bladder, and then distended with about 5 ounces (150 cubic centimetres) of warm sterilized water or Thiersch's solution. The distended balloon is drawn down firmly into the fistula by means of the rubber tubing, which is clamped and held on one side or the other as the different steps of the operation proceed. By this means the edges of the fistula are held steadily in view so that denudation is easily performed with accuracy. Fretsche, of Bonn, ³¹⁷ describes an operation which consists in making an aperture into the bladder above the pubes and placing the patient in such a position as to insure the escape of the urine by this new fistula. In five or six days after the establishment of this "artificial" fistula the vaginal fistula is closed in the usual way and heals readily. Browne ²⁰²

recommends the formation of an artificial vesico-vaginal fistula for the examination and treatment of ureteral diseases; this may ultimately be closed as an ordinary fistula. Ferguson²_{Feb. 24, '94} has offered an improvement on the old methods of operating, of which "flap-splitting" is the central idea. The fistulous opening being exposed, an incision is made through the vaginal mucosa at the distance of an eighth of an inch from the margin of the fistula; this incision is extended until it completely encircles the opening. The line of incision is carefully deepened till the lining membrane

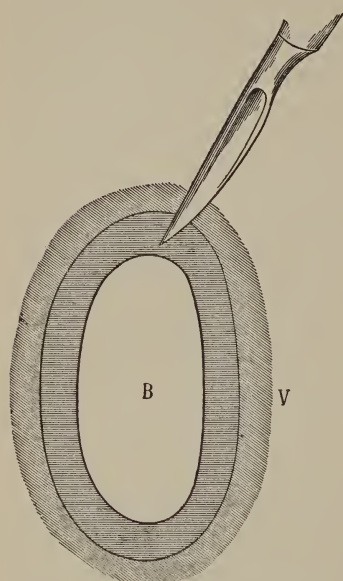


FIG. 1.—VESICO-VAGINAL FISTULÆ.
(FERGUSON.)

British Medical Journal.

of the bladder is reached, and great caution is exercised in retaining the integrity of that membrane. In this manner a circumferential flap, hinged by the vesical mucosa, is obtained. This flap is inverted into the bladder, thus forming a roof for the broad, raw surface exposed, and it is held in such position by a continuous suture of fine chromic catgut, inserted in such a manner that the stitches do not pierce the vesical wall. A narrow strip of vaginal mucosa which retains a suture well, owing to its density, thus becomes part of the lining of the bladder. The artificial opening is now closed and water-tight, and to complete the operation it is only necessary to pass and tie silk-worm-gut sutures on the

vaginal surface in the ordinary way, care being taken not to include in them the vesical mucosa. Fig. 4 shows a sectional view of the flap inverted, sutures, and the projection into the bladder. Mackenrodt³¹⁷_{No. 8, '94} describes his method of dealing with large fistulæ as follows: The anterior vaginal wall is put on the stretch by traction on the portio and the urethro-vaginal septum below the fistula, any cicatricial bands being divided. The bladder is also dissected off from the uterus as high as possible. A median incision is made through the vaginal mucosa, between these two points, and in a line with the middle of the fistula; the

edges of the latter are then split and the anterior vaginal wall is dissected off from the bladder as in vaginal fixation of the uterus. The edge of the fistula is denuded, and the opening in the bladder

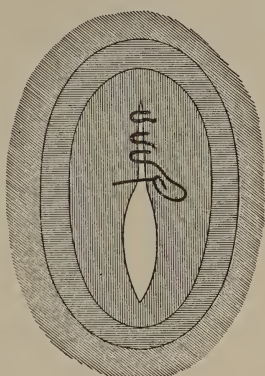


FIG. 2.

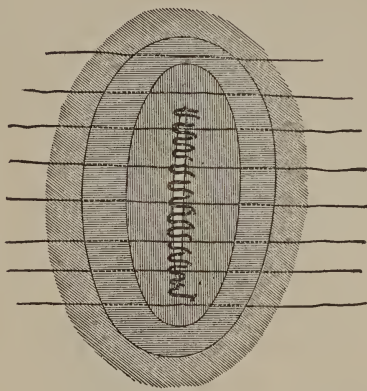


FIG. 3.

VESICO-VAGINAL FISTULÆ. (FERGUSON.)

British Medical Journal.

is closed with sutures of silk-worm gut; if necessary, a second layer can be introduced in order to fold in the redundant bladder-wall. The corresponding edges of the vaginal opening are then denuded; the fundus uteri is drawn downward as in vaginal fixation and united to the flaps of the vaginal wound, thus blocking the opening. The same method is followed in the case of utero-vesico-vaginal fistulæ, the opening in the uterus being closed by catgut sutures after the bladder has been dissected away. Skinner has employed the retroverted uterus with upward protrusion of the cervix in closing a large fistula; the anterior edge and sides of the fistulous opening were stitched to the posterior surface of the cervix just below the vaginal junction, thus fixing the cervix into this new position. Pollosson²¹¹ recommends the following

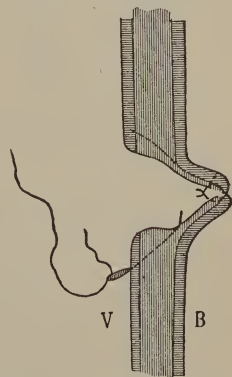


FIG. 4. — VESICO-VAGINAL FISTULÆ. (FERGUSON.)

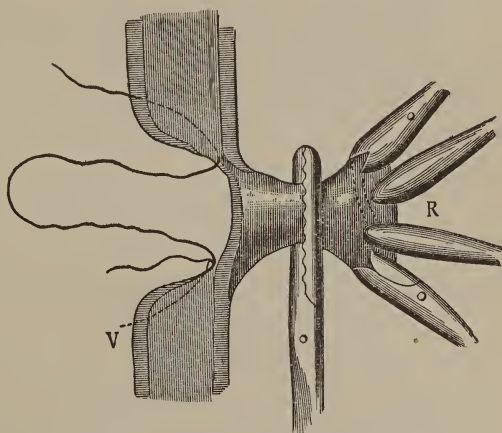
British Medical Journal.

procedure for the reparation of great loss of substance in the vesico-vaginal septum, with destruction of the lower wall of the urethra: The vesical perforation is first closed from behind

forward. Later, the urethral canal is closed at the expense of the vulvar mucosa and the lesser lips. His operation involves two recognized principles, namely, flap-splitting and the lining of the bleeding surfaces with mucous membrane. Merttens¹²⁶_{Apr. 15, '94} reports a case of vesico-vaginal fistula produced in childbirth, the vaginal canal having been obliterated by a large fibroid tumor. The accoucheur had incised the anterior vaginal wall, thus opening into the bladder. It was cured by a simple operation. Rimsch¹⁰⁰_{Sept. 11, '94} presented before the Obstetrical and Gynæcological Society of St. Petersburg a patient, 26 years of age, suffering from a vesico-vaginal and utero-rectal fistula complicated by hæmatometra. Examination showed that the perineum was intact, but that the entire urethra—save a small portion of about one centimetre in size—and the neck of the bladder were completely destroyed. The bladder was inverted and its mucous surface projected into the vagina, to the posterior wall of which it was adherent; the vagina was thus transformed into a *cul-de-sac* continuous above with the vesical cavity. Rectal examination showed an orifice joining the rectum with the uterus, the latter organ containing a large amount of black blood. In incurable vesico-vaginal fistulæ Tiollier²¹¹_{June, '94} advises the formation of an artificial urethra beneath the pubes after closure of the vulva. This new operation has been proposed and put into execution by Poncet. Incurable fistulæ are most commonly vesico- or urethro- vaginal, in which there has been an extensive loss of substance. The operation must be done in two stages, the first being suprapubic cystostomy and the second episiorrhaphy, or complete closure of the vagina and vulva.

Recto-Vaginal Fistulæ.—Ferguson,²_{Feb. 24, '94} Steele,⁶_{Oct. 28, '93} Dean,²⁰²_{Oct. 10, '93} Lipinsky,³¹⁷_{Mar. 3, '94} Giovanni,⁹⁹⁷_{Feb. 22, '94} and Robson²⁶_{Aug. 1, '94} have reported cases and devised methods of correcting this abnormal condition. In Dean's case the fistula was secondary to a rectal stricture, a sequel to diphtheria complicated with diarrhœa. In Steele's case the fistula was produced by a Zwank pessary that had been impacted in the vagina for nine years and a half; a simple operation cured the condition. Lipinsky cured an otherwise incurable vesico-vaginal fistula by the operation of episioleisis after the production of an artificial recto-vaginal fistula. Ferguson,²_{Feb. 24, '94} after looking over the literature of the treatment of recto-vaginal fistulæ and noting the colotomies of Rose and Czerny, the episioleisis of Baker

Brown, Slaviansky, Gerasimovitch, Crepsi, and Iakovleff (six cases in all), along with the rectangular-flap method of le Dentu, felt justified in attempting a new procedure, as follows: A circumferential flap is made from the vaginal surface; the incision extends to, but not through, the mucous membrane of the rectum. The edge of the flap is now seized with four pressure-forceps, inserted into the rectum, and a small pile-clamp applied to it. The free portion of the flap external to the clamp is burned off with the actual cautery, but the clamp is not removed until interrupted sutures of silk-worm gut are inserted in the usual way, without grasping the mucous membrane of the rectum, and tied on the vaginal surface. A rectal tube, well wrapped with iodoform gauze, is placed in the passage, while the vagina is also packed with iodoform gauze. In this manner an extensive denuded surface is secured which readily unites when properly coaptated. The rectal flap is cauterized, thus lessening the liability to septic infection from that source. The rectal tube and vaginal pack further guard the wound against germs



RECTO-VAGINAL FISTULÆ. (FERGUSON.)
British Medical Journal.

and act as splints to insure that rest so necessary to primary repair. The rectal tube is not disturbed for a week, and, when it is removed, a copious enema is administered to move the bowels. Robson²⁶_{Aug. 1, '94} has had five cases of recto-vaginal fistula within a very short period of time, all dependent upon difficult labor. When the fistula is low down he does not pare the edges, and therefore sacrifices no tissue. He lays open the fistula by cutting through all the tissues intervening between it and the surface; assistants, standing one on either side, place a hand on the skin over each tuber ischii and retract gently, converting the H-shaped gap into a transverse wound; pointed scissors are then employed to open up the recto-vaginal septum so as to

convert the narrow edge into a raw surface; slits are then made on each side straight forward for about an inch, as in Tait's operation for perineorrhaphy. The angles being drawn forward by catch-forceps, two or three chromicized catgut sutures are inserted on the wound side of the vaginal mucosa, so as to form the vaginal floor by closing the V-shaped slit; and in the same way two or three chromicized catgut sutures are inserted on the wound side of the rectal mucosa, so as to form the anterior rectal wall by closing the V-shaped slit in the rectum; these sutures are cut off short and will be buried. There is left a large rectangular raw surface which can be rapidly closed by four to six silk-worm-gut sutures entering on one side at the skin junction and emerging on the other at the same spot.

Vesico-Rectal Fistula.—Brewis ³⁶_{Dec., '93} reports an instance of this curious fistula which is believed to be unique. He suggests, as to its etiology, the simultaneous bursting of an abscess into both rectum and bladder, or a primary opening into the rectum, with an ultimate secondary opening into the bladder.

Ileo-Vaginal Fistula.—Narath ²²_{Dec. 13, '93} describes the case of a woman, aged 32 years, who had borne three children, and who presented a vaginal fistula through which there was an escape of fæces, and which communicated with a tumor in the ileo-cæcal region. He presumes that there was first a perforation in the posterior wall of the vagina, through which bands of mesentery projected, and whose upper portion, becoming gangrenous, led to the complication; he also suggests that the condition may have been due to a right-sided parametritis and consequent abscess forcing an opening between the vagina and the bowel.

Uretero-Vaginal Fistulæ.—Hochstetter ⁹⁵_{v. 15, '93} has been able to find records of 39 cases of uretero-vaginal fistulæ, of which 23 were caused by difficult labor, 10 followed total extirpation of the uterus, 2 the opening of a pelvic abscess, 1 the spontaneous breaking of an abscess, 1 from ulceration caused by a pessary, and in 1 case the cause was not given. Of the recent cases a fistula most frequently occurred as a result of hysterectomy. Zweifel believes that simple nicking of a ureter in attempting to ligate the broad ligament and parametrium *en masse* can cause a fistula; and also, where the uterus is carried through the vesico-uterine incision and the broad ligament ligated from

above, that the ligature must necessarily come very near the ureter where it crosses the broad ligament, and if too much tissue be included the ureter is carried backward, and, although it be so distant from the uterine wall that it is not cut into or across, it may be simply nicked and, through necrosis, a greater or less perforation may follow. In the treatment the best method is that of Schede, who first makes a vesico-vaginal fistula in immediate relation with the ureteral fistula and at the same time sutures together the vesical and vaginal mucosæ composing the fistular edges. At a second operation, usually twenty-four days later, he attempts the closure of this fistula by incising a strip of vaginal mucosa, three millimetres in breadth, immediately around the fistular edge (not the fistular edge itself) and inverting this intact strip of mucosa into the bladder, thus forming a condition of ectropion in the bladder, composed of the now united vesical and vaginal mucosæ, and making a mucous-membrane canal in relation with the mouth of the ureter. The advantages of this operation are: 1. The making of a lip-formed vesico-vaginal fistula covered with mucosa guards against later contraction. 2. The secondary operation prevents not only a fresh wound of the ureter-wall, but also of the vesical mucosa, and thus greatly reduces the danger of cicatricial narrowing of the ureteral opening. 3. If it become necessary after operation, the prepared canal is a sure guidance to the ureter in treatment with a sound. Novaro⁸⁴_{No. 13, '94} treats uretero-vaginal fistulae by transperitoneal implantation of the ureter into the bladder. The ureter is cut through as near the fistula as possible. A metal catheter is introduced into the bladder, and with it the lateral vesical wall is pressed out from within, a little above the lower end of the peritoneal incision, and incised for a distance of ten to twelve millimetres. The end of the ureter is then slit up longitudinally on its under side for one centimetre and then sewed into the opening in the vesical wall with interrupted catgut sutures. The peritoneal incision of the ureter is then united with continuous catgut to prevent urine from gaining access to the peritoneal cavity should the stitches give way. Schauta³¹⁷_{No. 17, '94} reports a case of nephrectomy for uretero-vaginal fistula in a woman 71 years of age, the fistula resulting from carcinoma. The sacral operation for carcinoma was performed primarily with the resulting fistula.

Uretero-Cystoneostomy.—Bazy¹⁵¹_{Dec.1,'93} has given this term to the making of an artificial opening for the ureter into the bladder in the case of uretero-vaginal fistula with obliteration of the ureter. It is a means of treatment of hydronephrosis produced by stricture of the vesical end of the ureter. A button-hole incision is made into the bladder, to the lip of which the cut end of the ureter is sutured. An elastic catheter is placed for five days in both ureter and bladder and the abdominal wound closed; the result in Bazy's case was excellent.

Persistent Gaertner's Ducts.—Milton⁶_{Oct.14,'93} has met two cases of this rare condition. One was treated by division of the opening of the duct from the vagina to the bladder, accomplished by inverting a strip of vaginal mucosa containing the orifice of the duct into the bladder and closing the vaginal wound.

PERINEUM.

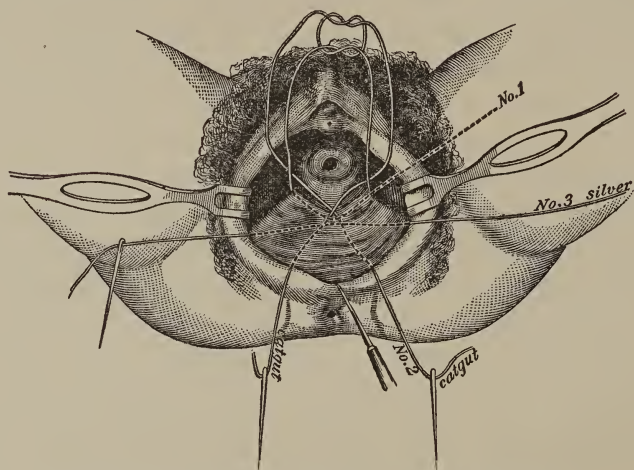
Protection of the Perineum.—Kelly²³³_{Feb.,'94} believes that in nearly every case rupture of the perineum in labor is occasioned in the following manner: The perineum having been distended to almost its very limit during the passage of the head, it contracts suddenly down over the neck, and if rotation is speedily performed the shoulders immediately redilate it. This is too sudden, and as a consequence the partially-paralyzed muscles give way. He believes that the only true way to prevent rupture of the perineum is to support the head from the perineum and retard the birth until the muscular fibres regain their elastic power.

Primary Perineorrhaphy.—Bloom¹¹⁹_{Feb.24,'94} during the past year has performed ten primary operations in primiparæ, some of the lacerations being quite extensive; the largest tear occurred in a woman over 40 years of age, married for twenty years, and pregnant for the first time. In this case it was necessary, on account of laceration of the deeper perineal structures, to place a deep row of sutures as well as a superficial row. There was perfect union, the deep sutures being of catgut and the superficial of ordinary surgeons' silk. In all the cases cure was complete.

Secondary Perineorrhaphy.—Duke²²_{Mar.7,'94} claims that the flap-splitting operation associated with the name of Lawson Tait was originally designed and carried out by a Dublin surgeon, Maurice Collis, who published a full description²⁰⁶¹_{May,'61} of this plan of opera-

tion as applied to the cure of vesico-vaginal fistula. In reply Tait ²²_{Mar. 14, '94} says that, while he acknowledges the priority of Collis's paper, in his operation for repair of the ruptured perineum the principle of flap-splitting is but one of a number of processes the rest of which do not come within the scope of Collis's paper. Noble ¹_{Nov. 18, '93} has performed during the year 44 cases of secondary perineorrhaphy by Emmet's method; primary union was obtained in 42 cases; in 2 cases infection and suppuration prevented union. He denudes higher up in the sulci than does Emmet, and secures a small introitus by carefully denuding and suturing the posterior commissure of the vulva. Montgomery ¹⁹_{July 28, '94} states that there exist some cases in which an immediate operation would be unjustifiable or unpromising. In those cases in which the woman has been subjected to long duration of labor, where it has been necessary to resort to manual or instrumental interference, the tissues have been very much bruised and lacerated; in such cases early union would endanger the patient, from the defective drainage and the probability of locking up material which would result from sloughing tissues. Outerbridge ⁵⁹_{Apr. 21, '94} offers a new and short method of closing the perineum, which is a modification of Emmet's operation. After the usual denudation but three sutures are required to coapt the denuded surface. For the upper suture a medium-sized catgut is required, about ten or twelve inches long, with a needle at either end. One needle is imbedded in the crest and continued along the upper line of denudation, coming out at the right upper angle in the undenuded tissue. The other is continued in a similar manner to the left, coming out at the left upper angle. This suture is not ligated, but the needles on either end are thrown over the symphysis temporarily. The next suture is of silver, and the needle imbedded one-quarter inch above the denuded tissue, midway between the upper and lower points of denudation, or, in other words, at the highest points of the denudation on the left side of the labia, and passed from left to right to a corresponding point on the opposite side, being thoroughly imbedded throughout. The upper suture is now ligated, care being taken to approximate the central point or tongue and the right and left angles. After this is done one of the needles of this suture is pressed downward and outward from this central point under the denuded tissue, and caused to emerge on one side of the labia about

one-half inch above the lower point or angle of denudation; the other needle is passed in a similar manner on the opposite side; this last catgut or lower suture should now be tied, care being taken to draw it tightly. This closes completely the lower angle of denudation. The silver suture is next to be twisted. Occasionally a superficial suture is required when the sutures are not in proper position. This operation lifts the posterior wall to the anterior, is easily done, produces less irritation, and does not admit of sloughing. Only one suture has to be removed. Outerbridge has performed one hundred and fifty perineal operations by this method without a failure. Routier ¹⁴ _{Mar. 4, '94} has devised a special procedure



METHOD OF CLOSING THE PERINEUM. (OUTERBRIDGE.)

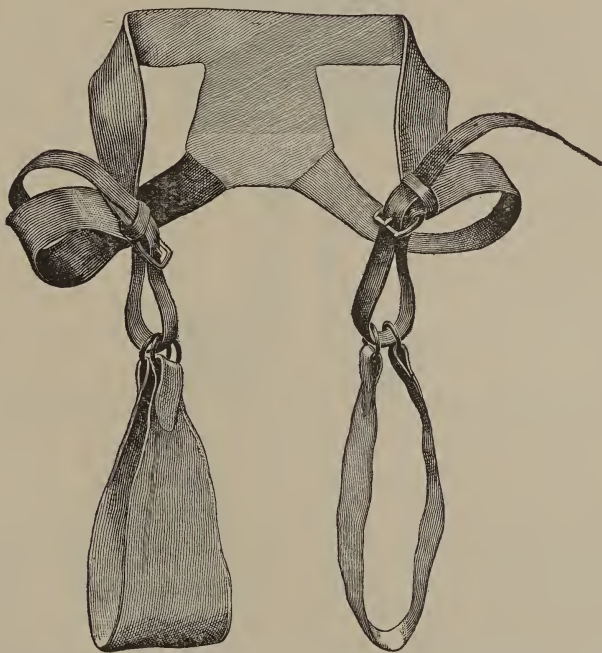
Medical Record.

for tears of the recto-vaginal septum. The vulva and rectum being transformed into a cloaca, the mucosa of the posterior face of the rectum produces a prominent jutting at the vulva and closes the tear. The rectum and the sphincter are first reformed. Going from left to right an incision is made at the point over the end of the sphincter, upon the border of the recto-vaginal tear. The vagina is separated from the rectum for three or four centimetres, and the incision, which was parallel to the borders of the rectum, being deepened, the rectal walls act as two valves, which are turned toward one another and sutured by Lembert sutures. The rectum is completed and the lateral walls of the vulva are sutured as in Emmet's operation. Segond ¹⁴ _{Mar. 14, '94} has obtained excellent results

by the following method: He first denudes as per Tait's method, then separates as far up as possible the rectal wall, and passes the sutures according to Tait's or Emmet's method.

In the performance of colpoperineorrhaphy, Petit⁴⁸_{Aug., '94} employs a balloon introduced into the rectum to secure a uniform surface on the recto-vaginal septum.

New Instruments.—Dowd⁵⁹_{Jan. 13, '94} presents a new apparatus for use in operating in the perineal region, the advantages of which he claims to be the following: (1) pressure is equalized over both

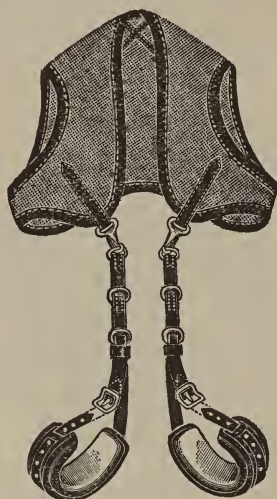


APPARATUS FOR USE IN OPERATING IN THE PERINEAL REGION. (DOWD.)

Medical Record.

shoulders; circulation is not interfered with nor the neck drawn forward, as by Clover's crutch or Blake's apparatus; (2) the legs are held in the median line, and are not drawn down to the side under which the strap passes, as with the crutch; (3) it can be carried in a small surgical bag; (4) it is inexpensive. Bassett⁵⁹_{Feb. 10, '94} offers a jacket support for the legs in perineal operations. It consists of a canvas jacket cut very short behind and with large arm-holes. The front is cut square, and at the lower angles are placed two snap-hooks. This jacket is put on before the administration

of the anæsthetic. When the patient is sufficiently under the influence there is placed on the thigh, just above each knee, a pad with strap encircling the same, and the strap is fastened in the buckle, drawing it tight enough to be snug. The snap-hooks are now caught in one of the three rings on each strap, and the patient is ready for the operation.



JACKET SUPPORT FOR LEGS IN PERINEAL OPERATIONS. (BASSETT.)
Medical Record.

TRACHELORRHAPHY.

Dudley ⁶¹_{Sept. 23, '93} presents a paper on the abuse of Emmet's operation for laceration of the cervix. The operation may fail or do harm (1) because the operator has disregarded the presence of endometritis; (2) because the os externum has been closed so tightly as to obstruct the free outflow of uterine secretions and menstrual fluid; (3) because the cicatricial plugs in the angles of the laceration have not been removed; (4) because diseased cervical glands have been rolled into the cervical canal, where they find expression either in the form of cervical catarrh or of retention cysts. First cure the catarrh, and then close the cervix to clinch the cure. When the Nabothian glands are diseased, three methods of destroying them are practiced: (1) strong cauterization; (2) the free use of the sharp curette; (3) excision. Dudley prefers the last. If the glands are cystic they should also be excised.

DISEASES OF PREGNANCY.

BY A. LUTAUD, M.D.,

PARIS.

STERILITY, FERTILITY, ETC.

The Influence of Minor Forms of Ovarian and Tubal Disease in the Causation of Sterility.—As the result of his observations, Thomas ¹⁹_{Aug., '94} draws the following conclusions: 1. The adjustment of the tube and ovary during ovulation is effected in the human female by the most delicate mechanical arrangement and may be defeated by trivial mechanical interferences. 2. In animals that habitually have multiple pregnancies a more perfect mechanical provision is made for the reception of the ovum by the tube. The number of ova impregnated seem to bear a close relation to the perfection of the arrangement which is provided for their passage into the tube. Thus, in the bird will be found the most perfect type of mechanical adjustment, in the woman the most intricate and difficult. 3. The adjustment of the pavilion of the ovary may be set aside by the most trivial vices of structure and disease, resulting in relative or absolute sterility. 4. Sterility is due to minor diseases of the tubes and ovaries to a greater extent than has been recognized. In considering the etiology of this condition this fact should be taken into account with other causative influences. 5. The highest aim of surgery is to restore and not to destroy function. In the treatment of minor forms of ovarian and tubal disease organs should not be sacrificed to the rule of expediency, but should be preserved in deference to a law of genuine conservatism.

Treatment of Sterility.—Bumm ³¹⁷_{No. 42, '93} recommends massage by bimanual palpation in cases in which sterility is due to displacements of the uterus or where, in consequence of a former labor, there results a chronic inflammatory condition of the uterus or adnexa, preventing a second impregnation. He also advises it in cases in which the semen is forced out of the vagina immediately after withdrawal, due to narrowness of the canal and an abdominal

irritability of the pelvic muscles, causing spontaneous contraction. The author has found it particularly useful in such cases.

Dilatation and massage of the cervical endometrium by the introduction of steel sounds, which are rubbed up and down in the canal, are specially indicated where there are thickening and hardening of the urethra with a diminution in its natural secretion. It is preferable to curettage or cauterization, which may result in a cicatricial formation instead of the formation of normal mucous membrane.

Seeligman³⁴_{No. 45, '93} has found that the husband is at fault in 75 per cent. of the sterile marriages observed by him, through azoospermia due to double epididymitis. That the latter condition is not necessarily hopeless was shown by the re-appearance of living spermatozoa in the semen after treatment. He recommends the active treatment of gonorrhœal epididymitis as soon as possible after the inflammatory stage with a view to prevention.

The application of galvanism to the cervical endometrium, as well as the use of the faradic current, is often successful in cases where there is entire absence of sexual response on the part of the female.

Artificial Fecundation.—Daligny, of New Hope, N. C.,¹⁸⁶_{Apr., '94} writes that the first step before undertaking artificial impregnation is to ascertain that the husband is fecund, as indicated by a normal condition of the semen; that the menstrual function is properly performed; that the pelvic and genital organs of the female are normal; that all other rational methods of treatment have failed. Sterility in women very often depends upon an acrid condition of the vaginal mucous membrane; and frequently a vaginal douche at bed-time, containing bicarbonate of sodium and glycerin, will lead to the desired result. In his practice he has never used the syringe, but prefers a hollow sound. The operation of artificial fecundation having been decided upon, coitus is practiced in the ordinary manner. Subsequently, within ten to twenty minutes, the woman, having in the meantime maintained the recumbent posture, the hips elevated on pillows, the hollow sound, being previously warmed to the temperature of the body and properly charged with the semen deposited in the vagina, is placed within the neck of the uterus to a point beyond the os internum, and the fluid is discharged by blowing it through the sound. The operation

should be performed within three or four days previous to the expected menstrual flow. The author always keeps his patient in bed four or five days after the injection of the fluid. Artificial impregnation is not very popular in the United States, but is more so in France. The author has had one successful result from three experiments.

Conception with Persistence of the Hymen.—J. T. McShane, of Indianapolis, ⁵⁶_{Sept., '94} reports that he was consulted, early in 1893, by a married couple, aged respectively 38 and 21 years, married three years, who had never had complete intercourse, on account of hyperæsthesia of the vulva and hymen. Digital examination was impracticable without anæsthesia, and this the patient declined. Inspection revealed the hymen intact, with an orifice not exceeding one-fourth inch in diameter. The slightest touch was attended with what seemed to be excruciating pain. Two appointments were made for an operation, but the patient's fear and timidity prevented any such procedure. In February, 1894, the husband stated that his wife thought she was pregnant, and on inquiry said that her physical condition was unchanged. Her opinion proved to be correct. In August the author was summoned to attend her in confinement. An effort to make a digital examination proved as unsuccessful as before. The patient was thoroughly anæsthetized. The opening of the hymen was not sufficient to admit the tip of the index finger. Under firm pressure it was felt to give way, and an abundant flow of arterial blood gave additional evidence of rupture. With the exception of difficult and protracted labor, which was terminated with forceps, the further history of the case was uneventful. The child, weighing $8\frac{1}{2}$ pounds (4 kilogrammes), did well.

Conception Four Days After Delivery.—Krönig ³¹⁷_{No. 19, '93} relates the following case: A woman, 22 years old, healthy and regular before her pregnancies, bore her first child on July 4, 1892. It was weaned on the tenth day, and is still living. On July 8th, the fourth day of the puerperium, the patient had connection, and then abstained for three months from coitus. The period did not return. In November, 1892, the motion of the child was felt. It was born on March 10th, and apparently had reached term, yet it had come into the world two hundred and forty-three days after the only connection which had occurred since the first confine-

ment, or twenty-seven days—practically a calendar month—before the normal average of two hundred and seventy. It was over twenty inches long, and weighed 7 pounds 12 ounces (3875 grammes). The shortness of the pregnancy was very remarkable, but the conception on the fourth day of the puerperium was still more notable. Ovulation, according to current theories, is entirely suspended during pregnancy, and does not recommence until, or a little before, the first period, which occurs between the sixth and eighth week after delivery in women who do not nurse the child. If ovulation were delayed so long in this case, the spermatozoa must have lived a long time. Bozzi certainly found them living in the posterior vaginal fornix seventeen days after a coitus; but in Krönig's case this delay of conception till the first period would have made the pregnancy much too short to allow of the birth of a well-formed child. In short, ovulation went on quite independently of menstruation. How the impregnated follicle could find a fit place of attachment on the inner surface of the uterus is a more mysterious question. Yet the glandular structures developed during pregnancies are often completely shed by the third or fourth day after childbirth; so that there is soon enough normal endometrium to lodge a fresh ovum. It is evident from this case that spermatozoa can live in the lochia.

Is Gonorrhœa an Obstacle to Conception?—John Wilson, of Sherman, Texas, ¹_{Dec. 9, '94} has published a paper on this question, and states that it had long been known that gonorrhœa in women was sometimes attended with complications that proved troublesome and of serious import. Authors had, for many years, been describing endometritis, metritis, and inflammations of the Fallopian tubes, ovaries, and peritoneum produced by an ascending specific elytritis, these structures being invaded by the poison slowly creeping up through the cervix, involving first the mucous membrane in its tract and extending by continuity of structure to the deeper tissues. The more serious results, however, had not been appreciated nor so well understood until within recent years, when laparotomy has become so common an operation and the pathology of the more important sequelæ have been studied from the specimens themselves. According to the experience of our best authorities, it is difficult to distinguish positively between gonorrhœal and severe simple elytritis without a clear and authentic history, for both are attended with the

same symptoms, and with the property of infecting the male; so that it is not altogether an easy task to say when ovarian, tubal, and uterine troubles, even with the presence of Neisser's gonococcus, have a specific origin, especially as simple elytritis may sometimes produce them all. Wilson has observed quite a number of women who were the victims of gonorrhœal infection, many of them innocently, having contracted it from their husbands, and believed the trouble to be an ordinary leucorrhœa. Many of those whose history he had been enabled to follow had afterward borne children, had remained for many years apparently healthy, and had given no evidence of the usual complications. The author reports cases illustrative of some of these conditions and results. That gonorrhœa does frequently prevent conception is probably well established; but he does not think it is by any means the universal rule—clinical illustrations are too many to the contrary. If Næggerath's statements were literally true, sterile women and fruitless marriages would be far more common and the increase in the race would be greatly lessened; for there is a surprisingly large percentage of men, judging from his experience, who, if they confess the truth, have suffered at some time in their lives from gonorrhœa.

The Passage of the Ovum into the Tube.—Heil,⁹⁵
B.43,H.3,'94 from numerous experiments on rabbits, decides that the presence of a constant motion toward the fimbriæ of the tube (*Fimbrienstrom*) sufficient to carry an ovum which is in contact with the peritoneum into the *os abdominale* has not yet been positively settled by experiments. Several factors must be noted. When the fimbriæ are in contact with the ovary at the point where the Graafian follicle ruptures, the conditions are most simple, since the ovum either falls directly upon a fimbria, and is carried along by the cilia, or it is floated over upon the fimbria in the liquor folliculi.

In cases in which the ovum falls into the peritoneal cavity at a distance from the tube, it either perishes (how often it is impossible to determine) or it is carried to the tube in the layer of peritoneal serous fluid by the peristaltic movement of the intestines or by capillary attraction.

We may also presume that, at the time when the follicle ruptures, there is a reflex action on the cilia, which are stirred to stronger movements in order to carry the ovum along more vigorously. The writer has been unable, from his own experiments,

to convince himself that the lymph-current which sets toward the abdominal end of the tube is sufficient to carry an ovum across the abdomen into the opposite tube. He doubts if the question will ever be definitely settled experimentally.

Prolonged Gestation.—Resnikow, of Elisabetgrad, Russia, ³¹⁷_{No. 24, '94} reports the following case: The patient, a secundipara, last menstruated normally on January 11, 1893. Nausea and vomiting were present in the beginning of February, and a month later Resnikow diagnosed pregnancy of six to seven weeks. Fœtal movements were felt at the fifth month. October 18th was fixed on as the probable date of delivery, but Resnikow did not see the patient until December 14th, when he found that she was still undelivered, that her general health was good, and that she had only come to consult him on account of the cessation, two days previously, of the fœtal movements which, until then, had been well marked, and also on account of slight abdominal and lumbar pains felt since the previous night. She stated that for six weeks after October 18th slight but distinct pains had come on daily for a few hours, sometimes compelling her to go to bed. These had been absent during December. The author found both fœtal movements and heart-sounds absent. The os admitted a finger. The pains continued until December 18th, when they became stronger, and on the next evening a macerated male fœtus was expelled. There was no liquor amnii, nor was any history of its previous discharge to be obtained. No measurements were taken, but the author claims that the case was one of at least eleven months' gestation.

Marcopoulos ²¹²_{Feb. 10, '94} shows that there is no evidence of any case of physiological protraction of labor beyond two hundred and eighty days. Protracted pregnancy is either extra-uterine or caused by an obstacle in the cervix. In one of his cases a fœtus died about the ninth month, probably from detachment of the placenta, and was retained through a mechanical obstacle—a fibroid tumor—in the cervix. There are four conditions in which the dead fœtus may be retained: 1. Ovum intact, no expulsive pains. In such cases expectant treatment is alone justifiable. Antiseptic vaginal injections are indicated. 2. Ovum intact, labor commenced. Full antiseptic precautions are here needed. Great care must be taken to delay the rupture of the membranes; hence digital exploration must be made and an antiseptic compress applied to the vulva.

Warm irrigation of the vagina will hasten labor. If, however, the labor become very lingering, intra-uterine injections must be administered hourly, and at shorter intervals, if the pains still remain weak. When the fœtus is delivered with only part of the placenta, more intra-uterine injections will be required before it is advisable to deliver the remainder artificially. This last manœuvre is only justified if two or three injections fail to remove the retained products of conception. 3. Membranes ruptured, no expulsive pains. Under these circumstances the induction of labor is urgent. After free antiseptic injections, a dilating bag must be passed into the uterus, and, a few hours later, labor must be conducted as in class 2. 4. Membranes ruptured and labor commenced. Labor then must be accelerated with hot vaginal injections or intra-uterine injections; if these fail, the dilating bag will be needed.

UTERINE AND OVARIAN COMPLICATIONS.

Pregnancy in a Uterine Cornu; Laparotomy.—Wehle³¹⁷_{No. 4, '94} recently demonstrated, before the Dresden Society, a specimen of pregnancy, advanced to the fifth month, in a rudimentary left cornu. The patient was 35 years of age, and had been four times delivered normally. The last period occurred in March, 1893. On August 28th, after a fall, hæmorrhage set in and continued till nine days before the operation, which was performed on October 26th. The right side of the uterus was enlarged and pushed to the right; the right appendages were normal. At the level of the os internum was a pedicle as broad as two fingers, with which the left cornu was connected. The left tube and the ovary, which contained a corpus luteum, were normal. The broad ligament was secured, an elastic ligature passed around the cornu, and the pedicle, after division, treated after Leopold's plan in hysterectomy. The cornu measured eight inches in its long diameter. After the sac was divided, the amnion was exposed and a fœtal foot could be seen through it. The cornu was exhibited, together with the fœtus and placenta. The patient made a good recovery.

Deficiency of Liquor Amnii.—An editorial writer¹¹⁹_{May 6, '94} states that this condition, even including cases where the amount is but little less than one quart, is comparatively rare, and its causation very uncertain. Minot claims that there is no satisfactory argu-

ment in favor of the view that the liquor amnii is an excretion of the fœtus, but that there is strong evidence that it is derived from the mother. A case reported by Jaggard, however, seems to support the more popular supposition. No fluid escaped during or after labor, and there was a very definite history of no previous escape of fluid. The scanty and tough amnion was folded closely around the body and required incision in order to permit the escape of the fœtus. The placenta and chorion showed no anomaly. The child lived about an hour. Post-mortem examination showed striking anomalies of the genito-urinary apparatus. The only kidney was a small triangular-shaped bit of tissue composed of thin-walled cystic spaces. The urethra was absolutely occluded and the rectum absent, with no opening from the intestine into the bladder. The latter organ contained a small amount of limpid, colorless fluid.

ENDOMETRITIS.

Tarnier ³⁴²_{Jan. 1, '94} lays great stress on the complications which endometritis may set up in a patient who becomes pregnant. The acute form is generally secondary. Chronic endometritis attacks the decidua vera, which becomes thickened and abnormally vascular. Before pregnancy the patient has usually suffered from free leucorrhœa. The cause of the endometritis is usually gonorrhœa, contracted from the husband. Syphilitic endometritis is probable, but Tarnier does not speak decidedly on this matter. Endometritis, a fertile source of abortion, is difficult to recognize during pregnancy. There is abdominal pain, as in many other complications of pregnancy, but it is only when endometritis has already been diagnosed before gestation that this pain can be taken as a symptom of its continuance. Occasional losses of blood are characteristic. Tarnier's opinion as to the result of treatment is gloomy, for he holds that endometritis cannot be treated as long as the pregnancy lasts; so that the risk of abortion cannot be entirely counteracted. Only when syphilis is suspected can benefit be derived from drugs. After delivery or abortion the endometritis can be treated by the free use of the curette. The increased vascularity of the decidua vera explains the frequency of hæmorrhages during pregnancy. The decidua reflexa is rarely attacked; hence the placenta is usually found healthy, and the child may be delivered alive and even reared.

Operations.—Mangiagalli ⁴_{May 21, '94} strongly advocates ovariectomy during pregnancy. According to him, suppuration frequently occurs in ovarian cysts during childbed. In 150 ovariectomies performed by himself, 5 were done during pregnancy and 11 very soon after the puerperium. Of the 5 pregnant cases, 1 died of shock; but suppurative peritonitis following suppuration of the cyst and tension of the pedicle had set in before operation. In the other 4 little or no difficulty was encountered,—2 were delivered at term, 1 at the eighth month, and in 1, where the operation was performed in the third month of pregnancy, labor was induced four weeks later on account of uncontrollable vomiting. The patient then recovered. Out of the 11 cases of ovariectomy shortly after delivery, 2 died, in both cases from acute suppuration of the cyst. In all the 11 there were dangerous or troublesome complications, namely, torsion of the pedicle with peritonitis in 2, torsion and suppuration in 2, primary suppuration of the cyst in 5, rupture of the cyst in 1, and hæmorrhage into the cyst in 1. Mangiagalli notes that in all his 150 cases suppuration of the cyst was only seen in 16. In half of these cases the complication was due to childbirth. Hence, ovariectomy in pregnancy is less dangerous than expectant treatment and operation deferred till after delivery. The operation should be performed directly the tumor is diagnosed, preferably in the course of the first five months.

Lebedeff ⁷²⁸_{May 25, '94} has operated five times on pregnant women, and Gordon reported the results at the recent Russian Medical Congress, comparing them with similar cases occurring in Russia. In Lebedeff's cases the cyst was multilocular in 1, unilocular in 2, bilateral dermoid in 1, and developed in the broad ligament in 1. All 5 recovered. In 2 pregnancy went on to term; 3 aborted between the fifth and fifteenth days. Ovariectomy during pregnancy has been performed in Russia in 204 cases; 21 could not be followed up so as to ascertain the continuation of pregnancy; in 7 the uterus was wounded, and 2 of these cases died; of the remaining 176 cases, 164 recovered completely, pregnancy continuing to term in 122, whilst 12 died.

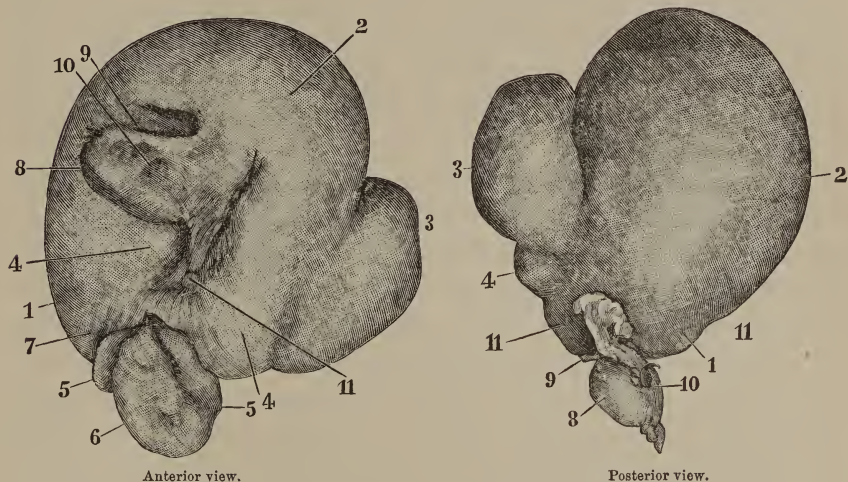
W. Long, of Richmond, Va., ⁸¹_{Apr., '94} reports a case in which he removed a pregnant fibrous womb. Hysterectomy for fibroids, complicated with pregnancy, is quite a new operation, and the cases published in the current literature were operated on without

a previous knowledge of the existence of the fœtus. The patient operated upon by Long was a negress, 21 years old, who had a fibroid tumor of large size, and presented, besides, all the symptoms of pregnancy. After a consultation with Stanton and J. S. Cox, and accepting the fact that the woman was three months pregnant, Long decided to operate. He made a long abdominal incision, and, no adhesions being found, the tumor and uterus were quickly turned out, the ovarian and uterine arteries ligated and cut, and, without any ligature of the pedicle, the whole was easily cut away at the internal os. The thorough control of the blood-supply is shown by the fact that it was not necessary to apply a single pair of forceps after severing the pedicle, which was trimmed, the canal cauterized with carbolic acid, superimposed rows of silk sutures applied, and the stump dropped. The peritoneum was carefully sutured on either side, the pelvic cavity thoroughly dried with sponges, and the abdominal wound closed without drainage. The further history of the case presents "nothing pathological," according to Stanton. The patient never had so much as a *rise of pulse*; no nausea, no pain, no tympanites—absolutely *nothing* to indicate that one of the most dangerous operations known to surgery had been done on her. She demanded something to eat the very next day. It is to be observed that there were several tumors—five or six, at least. The large tumor lay to the left and seemed to involve the whole fundus. The smaller one was to the left and was mistaken for the pregnant fundus. (See illustrations.)

In looking over the literature of abdominal surgery we find comparatively few of these cases reported, and in quite a large percentage of these the operation was undertaken *without the knowledge of existing pregnancy*. Long may justly claim to be the first surgeon in the United States who deliberately performed an hysterectomy for fibrous tumor complicated with pregnancy, and possibly the first one in America to suture and drop the pedicle.

Stavely⁹¹¹_{June, '94} tabulates 33 cases of this nature, including 2 previously unpublished, in which Kelly, of Baltimore, operated. The maternal mortality was 8, or 24.25 per cent.; 2 deaths were due to hæmorrhage, 1 to long-standing aortic disease, and 1 to peritonitis; 3 died after abortion, and 1 sank from an unspecified cause; 24, or nearly 80 per cent. of the 33, have been reported

since 1884. Eliminating cases operated upon before 1885, there remains a mortality of 16.66 per cent. Since 1889 17 cases have been reported, or over half the entire number, with a death-rate of 11.75 per cent. The foetal mortality is 30.30 per cent., or 9 abortions and 1 miscarriage; 20 of the women were delivered of living children at term; 1 was prematurely delivered at the eighth month, nearly six months after the operation. In 3 cases in which the mothers died no statement is made concerning abortion. Sixteen myomata are reported as pedunculated; 4 of the patients (including the case of aortic disease) died after the operation,



FIBROUS TUMORS COMPLICATED BY PREGNANCY. (LONG.)

1, uterine body; 2, large tumor; 3, medium-sized tumor; 4, small tumors; 5, placenta; 6, fetus in sac; 7, cut surface; 8, ovary; 9, tube; 10, ligature on ovarian artery; 11, ligature on uterine artery.

Virginia Medical Monthly.

1 aborted, 1 died after giving birth to a still-born child. In 15 cases where the myoma was sessile there were 6 abortions, and 4 patients died; 9 were operated upon during the last eight years, with 2 deaths and 1 abortion, the latter occurring in 1 of the fatal cases. Staveland considers that, with our present experience, and with the improvements in modern surgery, myomectomy for pedunculated or sessile tumors during pregnancy is, in properly-selected cases, comparatively safe and thoroughly justifiable.

Everke³¹⁷_{No. 24, '94} published the results in some cases of ovarian or uterine tumors operated on during pregnancy. In two cases he enucleated myomata. The first patient was in the fourth month,

and the tumor was of the size of two fists. Abortion occurred two hours after the operation. The second was three months pregnant, and the tumor was as large as a child's head; patient recovered without fever. Four weeks later abortion occurred during an attack of gastro-enteritis with high temperature. In both cases the sac left after enucleation was sewn to the abdominal walls. In two cases of ovariectomy the first was pregnant two months and gestation continued to term; the second, five months pregnant, was spontaneously delivered eight hours after the operation. Both recovered. In two successful cases ovariectomy was undertaken after delivery. On one occasion Everke observed spontaneous reposition of a large ovarian tumor during labor. In one patient, in the fourth month of pregnancy, a cancerous growth the size of a crown piece was excised from the cervix without abortion ensuing.

Chandler⁹⁹_{Jan. 25, '94} attended a woman, aged 36, in October, 1892. In November, 1883, a cyst of the broad ligament was removed. She remained weak and sickly for three years. At the end of 1887 she became pregnant for the first time. A mucous polyp was removed from the cervix in April, 1888. At the fifth month she miscarried. There had been morning sickness, but not of a severe type. At the end of August, 1892, she conceived again. Another mucous polyp was removed in September. Hyperemesis set in and proved obstinate, but ceased by the end of November. She was kept in bed until January, 1893, as Chandler thought that the previous miscarriage might have been due to adhesions developed after the operation, preventing the uterus from rising. On the morning of April 2d the patient was in great pain and the uterus was found to contract during each pain. It was high in the pelvis, the cervix was not taken up, and the os had not dilated. The foetal heart was audible. Morphine was given; nausea and vomiting set in. On April 25th, the end of the eighth month, the patient's health being very bad, labor was induced by manual dilatation and turning. The child, though in good condition at birth, died of convulsions on the third day. The mother made a perfect recovery, the vomiting ceasing immediately after labor. Green, who also attended the case, noted that the foetal head descended low in the pelvis early in the pregnancy, apparently because the tension of the abdominal wall, made more rigid by

the cicatrix, afforded more resistance to the enlarging uterus than the girdle of contact at the pelvic brim. The aggravated nausea and vomiting recurring in April was attributed to the pressure of the foetal head on the nerve-trunks in the pelvis and the nerves of the cervix. Homans, who had operated, remarked, when the case was reported to the Boston Society, that the operation was free from any complication. The ovary was removed with the broad-ligament cyst. There were no adhesions.

Löhllein⁶⁹_{Mar. 15, '94} reports two cases in which pregnancy occurred after ventro-fixation. 1. A woman, aged 30, had had the operation performed in July, 1892, on account of prolapse; in December, 1893, she was delivered of a child; the involution of the uterus proceeded satisfactorily. 2. A woman, aged 35, had myomectomy performed in November, 1892; as the uterus was retroflexed the bed of the tumor was stitched to the abdominal wall; five months later she had severe nausea and vomiting, and was found to be pregnant. The adhesions between the uterus and the abdominal wall could be felt. Subsequently she was delivered of a well-developed child, which, however, died shortly afterward. Ventro-fixation had been undertaken here to guard against bleeding and the infection of the peritoneum, in addition to the above-named reason. This method has been of service to the author in cases of enucleation of large myomata. He cites a case in which a rapid pulse and raised temperature led him to re-open the abdomen and stitch the bed of the tumor to the abdominal wall, with the best results. The indications for ventro-fixation are thus not to be limited by any fears in regard to conception and gestation. The bands of adhesions take part in the involution just as the utero-sacral and broad ligaments do, and there is reason to believe that the fixation will continue to be sufficient. In both cases there were marked nausea and vomiting during the early months of the pregnancy, severer than in previous pregnancies.

Vaginal Microbes During Labor.—Krönig,³¹⁷_{No. 1, '94} after reference to the investigations of Döderlein, Winter, Steffek, and others, who claimed to have found pathogenic micrococci, particularly the staphylococcus albus and aureus, as well as other pus-producing microbes in the vaginal secretion of women after labor, relates the results of his own experience in one hundred cases of women aseptic at the period of labor. He claims to have found in the

lochia the streptococcus most frequently, but the staphylococcus aureus seldom, and the staphylococcus albus never. After considering minutely the reaction of the vaginal secretion, which in three hundred pregnant women he found to be distinctly acid, he concludes that in pathological conditions the secretions attain a much higher degree of acidity, so that the streptococcus pyogenes can hardly thrive therein; at least, he was unable to obtain cultures of this germ. The author further concludes that the vaginal secretion of every untouched pregnant woman contains nothing pathogenic, the thrush or gonococcus germ excepted. Both are bacteria which, upon the usual media of culture, are aerobic at the body-temperature; the vagina of every untouched pregnant patient is therefore aseptic.

Vaginal injections of antiseptics he considers dangerous in the ordinary patient, as they may chemically lessen the resistance of the tissues to bacteria, and may increase the intensity of septic endometritis by washing bacteria into the uterine cavity.

CARDIAC AFFECTIONS.

Vinay, of Lyons, ²³⁶_{Nov., '98} endeavors to prove that the early stages of valvular disease do not seriously complicate pregnancy, which, on the other hand, does not aggravate the heart affection. He publishes instructive tables of 29 cases with full clinical histories. The cardiac lesions were: mitral incompetence 6 cases, mitral obstruction 11, mitral incompetence with obstruction 7, aortic incompetence 1, complex (aortic and mitral) lesions 3. Thus in 18 out of 29 cases there was mitral obstruction, uncomplicated in 11. Out of the 29 cases the pregnancy involved no further mischief in 18. In 2 patients influenza occurred, yet both were delivered at term. One patient had symptoms of melancholia and was delivered prematurely. In 4 there was marked œdema of the legs. Nearly all the 29 had varicose veins. In only 4 was the complication serious, yet all recovered. In the first there was mitral obstruction, hæmoptysis, and dyspnœa; in the second, twin pregnancy, obstruction, and great distress from weight of uterus, yet live twins were born at term, and one survived; the third was troubled with palpitations and loss of breath on exertion; she was delivered at term. In the fourth there was also twin pregnancy, as in the second, with much dyspnœa and asystole, due to mitral

incompetence and obstruction. The twins were delivered prematurely. The mother was weak and feverish during the puerperium, yet she recovered. In only 8 of the whole 29 cases was labor premature; 2 of the 8 were twin pregnancies.

Salvieff, of Moscow, ⁴⁸_{Apr., '94} at a recent meeting of the Moscow Obstetrical Society, read notes of five cases. The patients were admitted in the fifth, sixth, eighth, eighth and a half, and ninth month, respectively, with severe symptoms of mitral incompetence, with or without stenosis. The first patient was delivered of a dead child; abortion was induced in the second. In the third and fourth dilatation of the cervix and podalic version without chloroform were practiced. The fifth was delivered spontaneously after dilatation of the cervix. All the women rapidly recovered, and three of the children were saved.

SYPHILIS.

Tarnier, of Paris, ³⁴²_{Aug. 16, '94} recently published a clinical lecture on the case of a patient, aged 20, who contracted syphilis two months before term. When labor came on at term there was a chancre on the vulva and mucous patches on the cervix and on the soft palate. Labor began on June 2d; on June 4th, at 4 A.M., the membranes ruptured. The os was dilated to the diameter of a franc piece, and felt very tough. Antiseptic warm injections and hot baths did not aid dilatation. At 6 P.M. meconium came away; the os was as wide as the palm of a small hand. The forceps was applied, and it was necessary to make four short incisions before the head could be delivered, when the child was born asphyxiated. Insufflation through a laryngeal tube revived it, but it died in five hours. On June 6th the lochia became fetid and the temperature elevated. Sloughing of the vaginal mucous membrane was detected. The sloughs were brushed away and the iodine applied. A rigor occurred on the next day. The patient did well till the 15th, when pain in the left iliac fossa set in. Next day there were all the signs of peritonitis, tending to become purulent. On Fochier and Thierry's principle, 1 gramme (15½ minims) of essence of turpentine was injected into the subcutaneous tissue of the thighs, in order to produce abscess. This caused the symptoms of peritonitis to abate, but the patient died suddenly. Over 3 pints (1500 grammes) of pus were found in the peritoneum.

TETANY.

Neumann and Braun³¹⁷_{No. 20, '94} introduced a discussion on tetany and its relation to mollities ossium at the March meeting of the Vienna Obstetrical and Gynæcological Society. One case of Braun's was unique. A IX-para, aged 39, had suffered for five years from mollities, bearing five children during the illness. The disease always advanced during pregnancy and halted after each labor. In her last pregnancy tetany, from which she had never suffered before, set in. The bone disease making rapid progress, Porro's operation was performed. Immediately afterward the mollities ceased to advance, but the tetany still remained, though it usually ceases after labor. It was slowly disappearing at the time of the report. Braun's second case was in a woman aged 28. In her second labor, at the seventh month, severe tetany occurred during each pain. The spasms were confined to the right arm, and ceased on the administration of morphine, labor ending in a normal manner.

Neumann's first case was 37 years of age. In the second half of her fifth pregnancy tetany occurred in the hands, and recurred at every succeeding pregnancy when quickening was first noticed. During her eleventh pregnancy tetany attacked the hands, feet, and muscles of the neck. At delivery the convulsions became severe at each pain, and also on massage of the uterus. Laryngeal spasm and cramps of the diaphragm and muscles of the abdomen also occurred. The tetany became less frequent when the labor-pains ceased. In his second patient, who was 30 years of age, tetany occurred in the hands during the last month of her first pregnancy. It recurred during childbed after her third delivery; in the three following pregnancies and labors it was not observed. In the seventh pregnancy it set in two months before labor, and became very serious during the labor-pains. There was much pain in the hands, and the feet and eyelids were involved. After delivery of the child the convulsions became less. Post-partum internal hæmorrhage occurred, and the uterus was emptied of blood and the tampon applied; these manipulations aggravated the tetany, but the patient recovered, the tetany ceasing gradually during childbed. She also suffered from mitral incompetence.

ECLAMPSIA.

Paquy ²³⁶_{Apr., '94} recently read notes, at a meeting of the Obstetrical and Gynæcological Society of Paris, on the case of a patient who was frequently attacked with epileptic fits. She became pregnant, and at delivery had one hundred and nineteen fits, the temperature rising to 39° C. (102.2° F.). The diagnosis between puerperal eclampsia and epilepsy depends on the history and on the absence of albuminuria in simple epilepsy. Charpentier stated that he had observed a similar case. An epileptic patient had convulsions during her first labor, became pregnant again, and died after a succession of fits during the fourth month. He agreed with Paquy as to the value of albuminuria as a diagnostic factor.

Jenkins, of Glasgow, ²¹³_{June, '94} publishes a case which he explains by Favre's theory, that puerperal eclampsia is due to the action on the cerebrum of substances formed in the evolution of a local infective process. The patient had endometritis before and after the fourth and fifth pregnancies, and renal complications were present in the fourth, fifth, seventh, and eighth pregnancies. The fœtus died in the fourth month of the seventh pregnancy, but the ovum was retained until the sixth month, and endometritis and oöphoritis followed. In the eighth month of the eighth pregnancy eclampsia occurred a fortnight after a mild attack of influenza. Albuminuria was extreme, and a few granular casts were present. After two fits the condition yielded to treatment, and five weeks later a living child was born; the placenta was very soft and contained several white infarcts; the membranes were very thick, and the liquor amnii offensive.

The placenta of the seventh pregnancy was simply a large white infarct, firm and fibrous; the membranes were thick, the liquor amnii offensive, and the fœtus macerated. Jenkins explains the phenomena of the seventh pregnancy thus: "The placenta, as the result of antecedent endometritis (due to a micro-organism which had gained access to it) and hæmorrhage, was at an early stage transformed into an inflammatory product; and while this *defensive* process was being effected the products of the invading microbes were thrown into the maternal circulation, with albuminuria as the obvious result. But once the metamorphosis was complete, all interchange between the two circulations was at an

end. The fœtus died of starvation. The albuminuria ceased because the toxic products were no longer absorbed by the maternal vessels. The infective process itself either was now at an end or, what is more likely, continued to vent itself on the *ovum*, now practically a foreign body; whence the inordinate thickness of the membranes, the macerated fœtus, and the offensive liquor amnii."

In the eighth pregnancy bacterial infection was later, and revealed itself in albuminuria, anasarca, and eclampsia, after the patient had been weakened by influenza so that "the maternal economy, taken at a disadvantage, was suddenly overwhelmed by the toxic products of bacterial activity, and the integrity of various organs, kidneys, etc., . . . gravely compromised." The placenta was not much affected; so that the child lived. Treatment cleared out the toxic materials from the mother's body, and rendered it fit to deal with poisons continuing to be formed. The local process persisted; hence the changes in the membranes and liquor amnii similar to those of the seventh pregnancy.

RENAL DISEASE.

Albuminuria.—Oui, of Bordeaux, ²³⁶_{Dec., '93} observed 12 cases of albuminuria developed during pregnancy. In 11 of these cases the placenta was examined, and in 6 that structure was found diseased; 6 out of the 12 children died, and no cause for their death besides the albuminuria and the placental lesions could be detected. In 2 cases where the mothers were submitted to strict treatment the children were saved; the 6 children who died were born of the remaining 10 mothers. Three mothers died; the others were subjected in time to more or less careful dieting. Oui believes that when this treatment—milk diet—does not improve the patient's condition it is advisable to induce premature labor to save the child. Chaleix advocates the promotion of diuresis to eliminate toxic elements. He obtained excellent results, in a case where there was extreme anæmia, by subcutaneous injections of salt water. Lefour suggests that in Oui's cases the placental disease was probably the immediate cause of fœtal death.

Aufrecht, of Berlin, ³¹⁷_{Aug., '93} reports the results of investigations made in a number of cases of albuminuria before and after labor. Of 32 cases, none had albumin before labor or just after the commencement of the pains, but in 18 albumin varying in quantity from

1 or 2 to $\frac{1}{4}$ pro mille was found after labor. In all these cases the albumin disappeared in twenty-four hours. Epithelium was present, but no casts. It is concluded that labor or, rather, the pains of labor cause the albuminuria by producing some stagnation in the venous system, including the renal veins. Thus, the urine should be examined before labor, and if albumin is present the case should be watched, as an increase is likely to occur during delivery. If eclampsia appear at the beginning of or during the pains, the labor should be hurried on as much as possible, because, according to the author's experience, renal disease with albuminuria is, without exception, the cause of the eclampsia. The function of the kidneys is further compromised by pains of long duration and the danger to the mother is increased. Where artificial delivery cannot be effected, chloral is more suitable. Again, albuminuria and cylindruria are separate processes, the latter having nothing to do with the transudation of albumin through the renal vessels. Casts are the product of inflammatory irritation of the renal epithelium.

Nephritis.—Lancereaux, ²⁶⁸ June, '93 after discussing the etiology of the nephritis of pregnancy, which he attributes to the injurious influence upon the kidney epithelium of certain effete products which are eliminated by means of this organ, states that the patient should be submitted to an exclusive milk diet. If, in spite of this, the quantity of urine excreted remain small, appropriate remedies should be administered to favor diuresis. If this is unsuccessful, repeated purges are indicated, and when uræmic symptoms develop they should receive prompt and energetic treatment. Gastro-intestinal troubles should not be very vigorously combated, since otherwise the uræmic poison may exert its injurious influence upon the nervous system. Narcotics should not be given. Indeed, it is often desirable to administer an emetic, even though the patient complain at the time of frequent vomiting. When an eclamptic seizure develops in a primipara in the sixth month of pregnancy, enemata of chloral, with a purgative enema the next day, are indicated. The chloral should be used in doses of from 4 to 5 grammes (60 to 75 grains), and should be carried far up the bowel by means of a catheter to which a syringe is attached. Chloroform is also extremely useful; bleeding is only indicated when there is coma or signs of pulmonary congestion. As to

the histological lesion, which consists of a fatty degeneration of the epithelial cells of the convoluted tubules, aside from the exclusive milk diet, there are means of markedly influencing it. This is of no particular significance, however, since, if urinary insufficiency is guarded against, convalescence is sure.

MALIGNANT DISEASE.

Malignant Disease of Decidua.—Nové-Josserand²¹¹ Feb. 25, '94 relates a case in which a woman, aged 26, had amenorrhœa for four months, and then suffered from flooding for eight weeks, a large hydatiform mole being finally delivered. A few weeks later the flooding recurred. The uterine cavity was explored, and at one point it was found that the finger could be deeply plunged into the softened tissues. Some detached fragments were examined microscopically, and malignant deciduoma was diagnosed. On July 12, 1893, vaginal hysterectomy was done by Fochier. Disseminated malignant changes arising in the decidua were detected in the uterus. In October the patient was in excellent health. Löhlein³¹⁷ No. 20, '94 gives the further history of a case already published.³¹⁷ No. 14, '93 After an hydatiform mole had developed in the uterus and had been removed, symptoms of malignant disease set in,—an example of the malignant degeneration of the decidua but recently recognized by pathologists. On August 8, 1892, the uterus was extirpated. On August 31, 1893, the patient died. She had recovered perfectly from the operation, and remained well till the beginning of July, 1893, when dyspnœa and hæmoptysis set in. She ultimately succumbed to pleuro-pneumonia, evidently, it was declared, due to metastatic deposits in the pulmonary tissues.

Rapid Retrogression of Sarcomata After Induced Labor.—Jahr³¹⁷ No. 23, '94 reports the case of a woman, 36 years old, in the seventh month of her eighth pregnancy, of cachectic appearance, who presented a hard nodule, as large as a walnut, in the right breast, a tumor as large as a hen's egg in the right axilla, and one as large as a hazel-nut above the right clavicle. Upon the pectoral muscle was an enlarged gland. Two nodules as large as hazel-nuts were present at the introitus of the vagina, two on the interior wall of the vagina behind the introitus, and two also on the anterior lip of the cervix. Other nodules, forming a collection as large as a hen's egg, could be felt in Douglas's pouch. Frequently-recur-

ring attacks of severe abdominal pain caused the patient much distress, and led to the belief that the peritoneum was the seat of metastatic growths. It was decided to induce premature labor, and this was effected by the introduction of a small amount of glycerin between the membranes and the uterus. A partially-macerated, dead child was delivered, and the secundines came away without delay. Soon after the labor the accessible tumors were observed to be smaller in size, some almost entirely disappearing. The woman remained weak, and without much change in her condition, death taking place in collapse six weeks after delivery. Sections of portions of several of the tumors disclosed the histological structure of sarcoma.

Cancer Following Abortion or Childbirth.—Labusquière⁴⁸_{Apr., '94} published an instructive summary of a recent work on malignant degeneration of products of gestation left behind after the expulsion of the ovum. Gottschalk and Koettnitz have carefully investigated the pathology of the disease. There is a distinct malignant change in the histological elements of the remaining decidua; in short, the disease does not start in unhealthy uterine tissue adjacent to dead or inert decidual relics. The new growth is a very malignant large-celled sarcoma. Metastases occur early, following the course of the blood-vessels alone. Malignant deciduoma is recognized by distinct clinical evidence; constant hæmorrhage, following abortion or normal delivery, being the first sign. After the use of the curette small growths rapidly re-appear; they are always very soft. The symptoms call for total extirpation of the uterus. If the case be neglected, fever, rigors, and cough, with fetid discharge, appear, and the parametrium and vagina become infected. These signs indicate hæmorrhagic infarcts, metastases, and local extension of the growth. Paviot⁴⁸_{Apr., '94} describes a remarkable case of co-existence of a cystic, adenoid, and malignant deciduoma with metastases in a widow who had been subject to menorrhagia for years, and who denied ever having conceived. The menstrual decidua may undergo malignant degeneration and explain this case, but deciduoma in an undoubted virgin remains to be authenticated.

MEASLES.

S. Rémy, of Nancy,²³⁶_{June, '94} relates a case in which a pregnant woman, who had not had the disease in childhood, contracted

measles during an epidemic after nursing two of her children through the disease. The attack in the mother, as in the children, was mild. On the evening of the second day of the eruption she had colic, followed by copious action of the bowels. On the afternoon of the third day of the eruption labor-pains began, and in the evening the fœtus was expelled *en bloc* in the membranes. The infant lived for a few minutes. The mother made a good recovery; the lochia were not excessive and involution of the uterus proceeded in a normal manner. The pregnancy had lasted five months and ten days (from the last menstruation). Rémy observed that for the whole product of conception to be thus detached during the sixth month uninjured, and containing a living fœtus, is very unusual, and points to some special pathological process affecting the mucous membrane of the uterus. He suggests that measles may act upon the uterine mucous membrane as it does on that of the eyes, nose, pharynx, and bronchi, causing an inflammatory congestion similar to that which occurs in variola. The abortion occurred in his case at an earlier stage of the attack of measles than in most of the scanty number of cases on record.

ACUTE LEUKÆMIA.

Hilbert, ⁶⁹_{No. 36, '93} before the Medical Society of Königsberg, read notes of a fatal case of this kind. The patient was aged 37, and had been in good health until the eighth month of her eighth pregnancy, when headache, fever, diarrhœa, and gingivitis set in. Leukæmia was diagnosed on examination of the blood. Two lumps of the size of hazel-nuts developed on the tongue, and rhinitis and petechiæ were observed. A slightly-macerated child, almost at term, was delivered, the uterine contractions being very feeble. The mother died ten hours after labor. On post-mortem examination the lymphadenoid form of leukæmic disease of the red marrow was discovered. Only four cases of leukæmia complicating pregnancy have been discovered.

TUBERCULOSIS.

Lehman, of Berlin, ⁴_{June 25, '94} has published two cases in which tuberculous lesions of the placenta were observed. In the second case the tuberculous foci were situated in the chorionic villi,—that is, in the fœtal portion of the placenta. The infant died ten

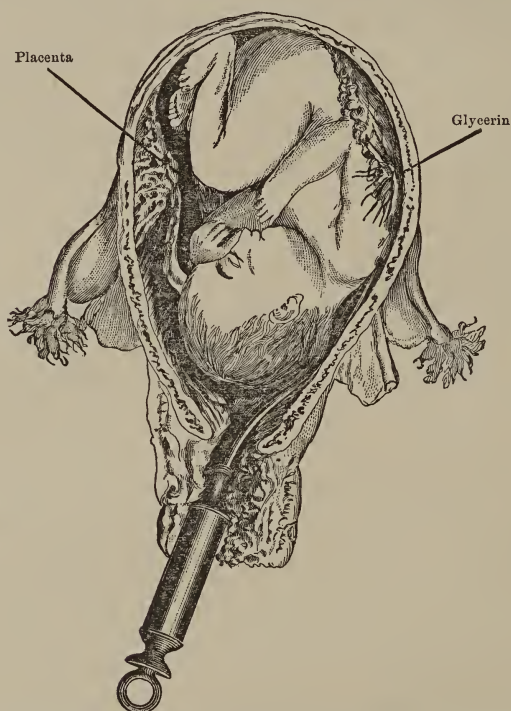
days after birth, without tubercle being actually found in the body. Such tuberculous lesions as occur in the bones and glands during childhood are better explained in this way than by aërial infection. The author has found placental tuberculosis in two out of three cases in which the mothers were affected with tuberculosis elsewhere. The changes in the placenta are so slight that they may easily be overlooked. The placenta should be cut in slices one-half centimetre thick, each part carefully examined, and doubtful portions examined under the microscope. Thirschfeld and Schmorl found tubercle bacilli in the foetal liver without obvious tuberculous lesions, in the case of a phthisical mother. In the first of the author's cases the tubercle, as might be expected, was found in the maternal portion of the placenta. The disease may spread to the foetal portion either by direct extension or by rupture into the intra-villous spaces.

A somewhat extensive research, made by Guinsbourg,²³⁶
seems to disprove the oft-repeated assertion that pregnancy delays the progress of phthisis, and rather establishes the reverse. Lebert reports 7 cases in which the malady had lasted from four to ten months; 2 succumbed ten or eleven days after delivery, the other 5 in from five to ten weeks after labor. Of 25 cases of tubercle in pregnant women, the malady terminated in death in 3 three months after accouchement; 5 cases, six months after; 11 before the end of the first year, or 76 per cent. during the first year. In young girls cured of tuberculous affections before their marriage, the children of their first pregnancies die soon after birth or are scrofulous or tuberculous. The same view is held by Müller, who adds that in tuberculous women the accouchement is complicated by uterine feebleness and hæmorrhage. Lactation seems even more injurious than pregnancy to the tubercular. The author believes that in such cases the interruption of pregnancy is followed by good results, and is of the opinion that curettage with strict antisepsis seems less of a risk to a tuberculous woman than to allow the pregnancy to run its course.

PREMATURE LABOR.

Intra-uterine Injections for Premature Labor.—John Polak, of New York,⁴⁶²
gives the following *modus operandi* for the induction of premature labor with glycerin. The success of the

operation depends almost wholly upon its aseptic technique. The glycerin is sterilized by taking about 2 ounces (31 grammes) in a clean bottle, corking loosely after taking a V-shaped nick out of the side of the cork, placing in a water-bath, and boiling for from twenty minutes to half an hour; the bottle is then tightly corked before cooling, and the glycerin is not touched again until required for the operation. The catheter and syringe are cleansed



GLYCERIN INJECTIONS IN PREMATURE LABOR. (POLAK.)

Post-Graduate.

by an immersion and washing in a 1 to 1000 bichloride solution for twenty minutes, finally rinsing in boiled water, to remove the sublimate. A pair of bullet-forceps are needed to complete the armamentarium. The aseptic technique of the operation is as follows: After the careful preparation of the operator's hands and forearms, the instruments (catheter, syringe, and bullet-forceps) are immersed in boiled water or a weak carbolic or creolin solution. The patient is placed with the buttocks well over the edge of the bed, and the vulva and vagina disinfected by scrubbing

with green soap and hot water for two or three minutes, removing the suds with hot water, followed by a vaginal injection of creolin (2 per cent.). The hand is now introduced half-way into the vagina, the anterior lip of the cervix fixed and brought down by bullet-forceps, and one or two fingers passed up to or into the cervical canal, if patulous, to guide the entrance of the bougie. The syringe and catheter are filled with glycerin, taking care that the glycerin is welling out of the eye of the catheter before attempting the introduction. The catheter is passed on the fingers as a guide, between the membranes and uterine wall, allowing it to take its own direction, using no force until seven to nine inches are within the uterine cavity. Then with great care and very slowly inject the glycerin, watching the patient carefully for untoward symptoms,—headache, etc. Withdraw the catheter about half an inch and turn it about, leaving it *in situ*; tampon the vagina with iodoform gauze and wait. The accompanying illustration will give some idea of the action of the glycerin and position of the catheter.

Pfannenstiel ³¹⁷_{No. 4, '94} relates his experiences with intra-uterine injections of glycerin for the production of premature labor. He states that when this procedure was first published he admired its boldness, and concluded that its dangers were but occasional. His later experience in two cases, the histories of which he gives, has led him to a change of opinion. In the first case labor was induced on account of advanced albuminuria, after the usual therapeutic means had been tried. Following consultation with his colleague, Wilke, the author, under all aseptic precautions, injected 100 cubic centimetres ($3\frac{1}{4}$ fluidounces) of chemically-pure glycerin between the foetal membranes and uterine wall. In a short time the patient showed symptoms of profound collapse, which, notwithstanding all means of restoration, ended fatally in a few hours, the patient dying undelivered. The autopsy showed death to have been due to nephritis.

In the second case induction of labor had been attempted by bougies, four weeks before term, on account of rachitic pelvis, combined with stenosis of the os uteri and cervix. The bougies not having the desired result, after consultation 100 cubic centimetres ($3\frac{1}{4}$ fluidounces) of concentrated glycerin were injected. One hour afterward the patient suddenly became cyanotic, and

the temperature, which had been 39°C . (102.2°F .), fell to 37°C . (98.6°F .), rising again to normal.

The urine drawn off by catheter an hour after the injection showed blood, albumin, and casts, and spectroscopical examination demonstrated methæmoglobin with hæmoglobin. In twenty-four hours these abnormal constituents gradually disappeared. The glycerin failed to excite uterine contractions, but a small, living child was delivered later by other means. The mother recovered.

The author believes that the glycerin in these cases caused decomposition of the blood, and he agrees with Afanassiew, who found that in dogs glycerin produced hæmoglobinuria, glomerular nephritis, and even interstitial nephritis. Although in the first case nephritis undoubtedly existed, it is his opinion that the glycerin injection hastened the fatal termination.

ABORTION.

Pilliet ⁷³_{Apr. 7, '94} has studied two distinct cases of tubal abortion and compared them with many other reported instances of this condition. The chief characteristic of tubal abortion is its incompleteness. After destruction or expulsion of the fœtus, portions of placenta remain attached to the tube and continue to develop. The same occurs in many cases of early uterine abortion; hence placental polypi or tumors—"placentoma" or "deciduoma"—develop. Dropsical, hydatiform, chorionic villi, representing an abortion dating several years back, have been removed from the uterus with the curette. But the parasitic remains of the placenta are far more commonly seen, if not constant, after tubal abortion. In tubal gestation ending in abortion small hæmorrhages set in; then a free show, corresponding to the expulsion of part of the ovum. Slight oozing follows, the tube fills gradually, and at last another considerable loss of blood occurs. The presence of a piece of placental tissue explains this phenomenon. When, therefore, after a loss of blood resembling in clinical history an abortion, a tube remains enlarged and tender, and when uterine hæmorrhages continue, without complete return of the tube to its normal proportions, tubal gestation and incomplete abortion may be diagnosed, and an operation is indicated to anticipate the risks of intraperitoneal rupture. The persistence of portions of placenta after abortion appears easy to explain. At term the blood-sinuses of the

uterine tissue have widened and coalesced so as to form a single layer of blood between the maternal and the foetal structures. Hence, complete detachment of the placenta is easily effected. In abortion this condition has not developed, detachment becoming more difficult. In tubal abortion the placenta becomes closely united to the tubal wall, which cannot undergo the complicated changes that occur in the uterine tissue in normal pregnancy.

Goenner³¹⁷_{No.3,94} reports the case of a woman, aged 37, who had given birth to four children at term, and committed abortion on herself three times. Believing herself to be pregnant, she inserted an elastic catheter into the vagina. The operation caused considerable pain, and on withdrawing the catheter some hæmorrhage occurred. It was also found that a part of the catheter remained behind. An attack of peritonitis followed, and abortion occurred five days after the insertion of the instrument. Six days later, during defecation, the patient was seized with severe pain in the lower part of the abdomen and the ileo-cæcal region. No trace of the piece of the catheter could be found by palpation, and operative procedures were considered, when the fragment was passed in fæcal evacuation. No trace of a puncture of the vagina could be found. The patient eventually recovered.

Alberti, of Potsdam³¹⁷_{No.21,94} states that a practitioner used the curette after retention of fetid membranes in abortion. The patient, aged 32, had borne five children. In drawing down what he thought was a relic of decidua, he found that it was a coil of intestine. He applied the tampon around the gut, and sent the patient into a hospital. Alberti, three hours after the perforation had occurred, performed abdominal section. There was a rent about an inch long in the right cornu uteri. A coil of small intestine filled the rent, was held tight by the os internum, whence it had to be liberated by a hernia-knife. The strangulated intestine was over six and one-half inches long, distended, hyperæmic, and very dark at the line of constriction. The uterus was very soft, and exceedingly thin around the perforation. It was closed with four Lembert sutures. The patient made a good recovery. Four weeks later the metrorrhagia set in and the curette was used again. Six weeks afterward it was once more employed, and iodine applied. This occurred at the end of 1892. The patient is now in good health, and has not since conceived.

Veit, in the discussion, reported a similar case and stated that he regarded the forceps as a dangerous instrument in cases of abortion. A soft uterus could be perforated even with the sound, and it made little difference whether the curette was sharp or dull, since perforation was doubtless made with the rounded end rather than with the edge; when the forceps was used, however, there was additional danger that a loop of intestine might be drawn through the opening. He was opposed to the removal of retained products of conception with the forceps unless they were first located with the finger, the forceps being then introduced with the finger as a guide. Gusserow saw a case in which the omentum was pulled down with the forceps, and Orthmann one in which the physician perforated the uterus with the same instrument, and badly lacerated a loop of intestine, tearing away its mesentery. Olshausen observed a similar case, and Martin one in which thirty inches of the intestine were drawn through the perforated uterus. In several cases, however, in his own practice, he had three times perforated the uterus with forceps, and once grasped a loop of intestine, but recognized it by the touch and released it. Coe reports two cases in which forceps perforated the uterus and pulled down the intestine. One case recovered after an operation.

OBSTETRICS AND PUERPERAL DISEASES.

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AND

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PHYSIOLOGY.

Munder, ⁹⁵_{May, '94} from his observations on labor among women under 20 years of age, concludes that delivery in such cases generally terminates favorably. Contracted pelvis is frequently met with and face and vertex presentations are common, while shoulder presentations are rare. Labor is two or three hours longer in primiparæ, diminishing in length as the patient approaches the twentieth year. Eclampsia and other complications are not more common in primiparæ than in other women, and the author was not obliged to use the forceps more frequently in his cases; perforation, however, was more often necessary on account of contracted pelvis. Laceration of the perineum is rare in young patients on account of the greater elasticity of the soft parts. Relatively, more female children are born than male, and, the younger the mother, the smaller the child. Premature labor occurs more frequently in cases of extreme youth. The proportion of living children was favorable, and the after-course of labor good.

Westermarck ¹⁶²_{Jan., '94} has made experimental researches upon the uterine contractions during physiological labor. He introduced a bladder into the uterine cavity above the fœtal head and attached it to an elastic manometer. He found that intra-uterine pressure during the intervals of contractions reached from seventy to eighty millimetres of mercury, but generally it was but forty millimetres. After rupture of the membranes the volume of the uterus diminished and, in the interval following the pressure, was lowered, but rose again in succeeding intervals and reached that of the first observed. During the expulsive pains the action of

the abdominal muscles was shown by short variations in pressure, the duration, frequency, and force of the contractions increasing toward the end of labor.

Rivière¹⁸⁸_{Jan. 3, '94} discusses the rôle of the muscular wall of the abdomen during the period of dilatation and the necessity of employing abdominal bandages in cases of eventration. He believes that the muscular wall offers a plane of resistance to exaggerated anteversion, which, without this resistance, would be followed by contraction of the round ligaments. When there is considerable eventration the wall no longer plays this part, uterine anteversion is exaggerated, the cervix is pushed violently backward, and cannot take its true place in the axis of the pelvis; so that the process of dilatation occurs but slowly or does not occur at all. A properly-fitting bandage would, in such cases, notably favor dilatation.

PRESENTATIONS.

Vertex.—Muret¹⁹⁷_{Jan. 20, '94} publishes a study upon transverse positions of the vertex in the inferior strait of the pelvis. The failure of the head to rotate and the persistence of such presentation may give rise to serious complications. Muret divides these cases into primary, due generally to an anomaly of the pelvis and existing from the beginning of labor; secondary, due to arrested normal rotation in occipito-posterior presentations; and, finally, mixed cases, more rare where the abnormal position depends upon a combination of the primary and secondary causes. In these cases rotation sometimes takes place and the head frees itself spontaneously; when rotation does not take place the head frees itself transversely or else labor is arrested. The prognosis is relatively favorable for mother and child; however, vaginal fistulæ, extensive perineal lacerations, and rupture of the pelvic articulations are to be feared for the mother, and compression of the head, intra-cranial hæmorrhage, or other accidents of prolonged labor for the child. As treatment, Muret recommends the expectant plan as long as possible, and, if necessary, application of forceps to one of the oblique diameters of the pelvis, rotation being accomplished by manual manœuvres. Perforation is rarely necessary. If the child is living and the disproportion is too great, symphysiotomy is recommended; when dead, perforation if the application of forceps is difficult.

S. Boydston,¹⁹_{Dec. 9, '93} in delivering a primipara, found the child doubled on itself in the hollow of the sacrum, the face forward and the feet covering the upper part of the head. He was able to push back the feet and legs by using considerable force, and the labor then terminated without further complication.

Face and Forehead.—P. Bernardy¹²¹_{Dec., '93} claims that, in posterior face presentations, the forceps only serves to complicate matters and to cause serious injury to the mother. In his opinion, one should resort to craniotomy when all other measures have failed; for, although the child is living, its condition is so seriously compromised that it may be considered as dead. Craniotomy should not be performed after long hours of painful labor, but immediately.

Budin¹⁹⁴_{Nov. 9, '93} indicates the reasons of failure in the use of the forceps in these cases. As in posterior vertex presentations, being given the cephalic curve of the forceps, instead of lowering the occiput the head is deflected and grasped; in posterior face positions, given the cephalic curve, there is a tendency to lower the occiput instead of the chin with the extremity of the forceps, the cephalic extremity being still engaged. To obviate this inconvenience he advises, before making traction, to bring the chin in front with the forceps and then make a new and direct application. In the latter situation the extremity of the instrument will tend, at the moment of traction, to draw down the chin, and deflection of the head will thus be completed. He reports three cases showing the usefulness of this method, which has also been studied by Robert.²⁰⁸¹_{'94}

Fournel¹⁹⁴_{Nov., '93} advises flexion of the head from the beginning of the period of dilatation by means of an elastic dilator. Davis⁹_{July 14, '94} recommends version when the dimensions of the pelvis are normal and the head is not engaged, and symphysiotomy when the head is engaged and there is sufficient disproportion between the presentation and the diameters of the pelvis to hinder labor.

J. Bullitt⁵⁹_{Aug. 4, '94} was able to transform a vertex into a face presentation, the chin facing the hollow of the sacrum, by means of manual efforts. He then used the forceps and delivered a living child. These cases are, however, quite rare. N. Charles,²⁵⁶_{July 22, '94} in a case of mento-iliac right posterior face presentation in a primipara at term, in whom the diagnosis was obscured by the size of the bag

of waters and the elevated position of the foetus, attempted, without success, to perform manual rotation. He then made an application of the forceps in the hollow following the sacro-pubic diameter,—that is, antero-posteriorly,—thus effecting rotation, with good results for mother and child. The author, however, prefers version whenever possible.

Cocq⁸⁶⁸_{Jan. 6, '94} relates an interesting case of changed presentation in the course of labor, in spite of engagement in the superior strait. The case was one of vertex presentation in left posterior occipito-iliac position, becoming left anterior and, after a long labor, transformed into left mento-iliac face, with prolapse of one foot. Version was performed and a living child extracted. Post-partum hæmorrhage followed, but was arrested by intra-uterine tampons. The after-course was normal. C. S. Patterson⁶_{Nov. 11, '93} observed a case of forehead presentation in a rachitic pelvis the conjugate of which was three and one-fourth fingers. The forceps was applied and fruitless attempts made at reduction, the umbilical cord prolapsing to the left of the promontory. Version was performed twenty-seven hours after rupture of the membranes, the trunk being easily extracted, but the head being delivered with great difficulty. The child had succumbed.

Breech Presentations.—J. H. Owings⁹_{Nov. 25, '93} reports a case in an albuminuric primipara suffering from considerable œdema. Dilatation was almost complete, when she had a violent convulsion. The author attempted podalic version, but could not reach the feet. He then passed a finger into the sulcus inguinalis and made traction to lower the left thigh. A cracking sound was heard, the leg descended easily, and delivery was soon effected. The infant, which weighed 12 pounds, was unconscious, but was quickly resuscitated. The left leg was found to be fractured.

Koettnitz⁴⁰¹_{No. 88, '93} concludes that hæmatoma of the sterno-cleido-mastoid muscle may follow spontaneous delivery in breech presentations. Torticollis is the most frequently observed complication; it may appear at birth, when due to intra-uterine causes, or may not be noticed for some time, when due to sterno-cleido-mastoid lesion produced during birth. A. R. Craig¹¹²_{Apr., '94} cites a case of uterine rupture in a woman with contracted pelvis, the child presenting by the breech.

Shoulder Presentations.—E. Dupuy⁷³_{Dec. 16, '93} describes a case of

delivery by internal manipulations favoring evolution in a shoulder presentation. The woman was a multipara, and the child presented transversely with one arm prolapsing. Spontaneous evolution was already advanced, and by traction of the arm Dupuy freed the right shoulder and upper part of the back; with the blunt hook passed in the left inguinal region and the right index finger applied firmly in the back, on the trunk, and then in the right inguinal region, he made traction, soon causing the breech and members to be set free. He then delivered the head by the Mauriceau method. It is to be noted that the child was dead, being at seven months and weighing 2700 grammes ($86\frac{1}{2}$ ounces). However, the author believes that even had the child been living the manœuvres favoring forced evolution would certainly have been indicated (?). J. Ullmann¹_{Jan. 6, '94} also saw a case of spontaneous evolution, but the foetus was dead and partly macerated. The placenta was expelled at the same time, being small and partly degenerated. Oui,¹⁸⁸_{Mar. 23, '94} in a case of shoulder presentation, performed evisceration, followed by forced evolution.

MULTIPLE BIRTHS.

The following cases present features of special interest: T. Davis¹⁸⁷_{July, '94} delivered a woman of a well-developed child in perfect health, and then of a second foetus, hydrocephalic, macerated, and partly decomposed. The two infants were contained in the same amniotic sac. The author was unable to ascertain the cause of death in the one foetus. Several days before labor the mother had shown symptoms of intoxication, which led to the supposition that absorption of septic matter from a dead foetus was taking place. Turck¹¹⁷_{Oct., '93} relates a case of twin pregnancy in which there were two distinct placentæ, both prævia. The mother recovered, but both children died. Bodilly²_{Feb. 10, '94} observed an unusual position of the placenta in twin pregnancy. One was a placenta prævia and the other was near the orifice of the Fallopian tube. Kohl¹_{July 14, '94} saw a case of twin pregnancy in which twenty-four hours elapsed between the birth of the first and second child. D. Rose¹⁸⁶_{Mar., '94} had a case in which six hours intervened between the birth of the children. The placentæ were separate, and but little blood was lost. There was complete hour-glass contraction and elevation of the uterus in the abdominal cavity. L. Callahan¹_{June 9, '94} attended a

case in which forty-six hours elapsed between the birth of the twins. A. Bolling⁸¹_{May, '94} cites the case of a multipara, aged 32 years, whose mother and sister had had twin pregnancies and who gave birth to twins, with an interval of thirty-seven hours between the birth of each.

Smith⁵⁹_{Jan. 6, '94} reports a case of twin pregnancy in a woman with a double uterus. Propokieff¹⁶²_{p. 317, '94} publishes an instance of triple pregnancy at the eighth month. At the first examination complete dilatation with vertex presentation was found, and the child was suddenly delivered after a single contraction. A second examination showed that two children remained, which were delivered one after the other in a space of fifteen minutes. Two were boys and one a girl, each weighing from 1600 to 1800 grammes ($51\frac{1}{4}$ to $57\frac{1}{2}$ ounces) each. There were two placentæ, united by a large membrane, and two ova; in one of these were two sacs having a common amnion and two chorii. These sacs contained the two boys. The second placenta, which was smaller, had but a single sac and contained the girl. The placenta with two sacs had developed in the lower part of the uterine cavity and the other in the upper part. It was therefore a case of two fertile ova in the same menstrual epoch,—one with a single and the other with a double vitelline nucleus.

COMPLICATIONS.

Tumors.—Bourcart⁴⁸_{p. 19, '94} reports a case of uterine myoma complicated by pregnancy and torsion of the uterus. Spontaneous abortion occurred and recovery followed the operation of hysterotomy. Hernandez,⁴⁸_{Aug., '94} in discussing the treatment of cancer of the gravid uterus, arrives at the following conclusions: 1. During the first three months vaginal hysterectomy is the operation of choice. 2. When the fœtus is viable (seven and one-half months) the Cæsarian operation, immediately followed by total extirpation of the uterus and appendages, meets all the requirements. 3. Between four months and seven and a half months, total abdominal hysterectomy should be practiced without delay.

Condamin²³⁶_{p. 309, '94} believes that surgical intervention is warranted in cases of pregnancy complicated by ovarian cysts as soon as the diagnosis is made. Jacobs¹⁶²_{p. 265} removed a cyst of the ovary *per vaginam* by means of forcipressure, the pregnancy following a

normal course. C. H. Stratz¹⁶²_{p.183} and Hooper May²_{Dec.2,'93} performed ovariectomy during pregnancy, with excellent results for mother and child. Guérin,²⁰³¹_{'94} however, believes that such good results do not always follow these surgical operations, pregnancy being frequently interfered with.

Malformations.—Litchkous⁴⁸_{Oct.,'93} reports two cases of uterus bicornis. In the first there had been four pregnancies, and at each labor the empty cornu expelled a decidua. In the second case the expulsion of a decidua with the placenta led to the diagnosis. There was no accident in these labors, and the author believes that such cases frequently pass unnoticed. Eustache⁴⁸_{May, June,'04} records a case of double uterus in which five successive pregnancies occurred alternately in the left and right uterus, with normal delivery. Each time the non-gravid uterus expelled its decidua four or five days after labor, and, at least after the first two labors, was the seat of a puerperal metritis which did not affect the other uterus.

Infectious Diseases.—Dorothée Chellier²⁰³¹_{'94} states that two-thirds of the cases of pregnancy complicated by typhoid fever are followed by expulsion of the products of conception, thus favoring infection by the streptococcus, determining puerperal fever. This infection occurs through the vagina and is especially serious, necessitating the most rigorous antisepsis both before and after the premature labor. The patient should also be bathed in antiseptic water.

Chambrelent¹⁸⁸_{Oct.10,'94} treated a patient who, at a previous labor, had suffered from vicious insertion of the placenta and puerperal fever of a phlebitic form. She presented herself at the hospital at term, with a temperature of 39.8° C. (103.6° F.). A diagnosis of pneumonia was made. Spontaneous labor took place, a healthy child weighing 4000 grammes (9 pounds) being born. The mother died two days later, and at the autopsy it was found that there was an enormous abscess of the liver and gray hepatization of the lung at the level of the diaphragm. The author attributes the abscess to the phlebitis of the previous pregnancy. G. Frees³¹⁷_{Oct.21,'93} observed a case of perinephritic abscess at the end of pregnancy. The patient was delivered of a living child and died fifteen days later with symptoms of peritonitis and peripneumonia. The abscess had been opened on the third day after labor.

General Diseases.—Solowieff⁴⁸_{Apr., '94} observed five cases of cardiac disease in pregnancy, with serious symptoms of mitral insufficiency or stricture. The first patient gave birth to a dead child, labor was induced in the second, in two others recourse was had to dilatation of the cervix and podalic version without chloroform, while the last patient was delivered spontaneously after dilatation of the cervix. All promptly recovered and three of the children survived. Eames⁶_{July 24, '94} observed a case of sudden death from heart disease during labor. The pains were normal. Cæsarian section was not performed owing to the opposition of the family, and delivery could not be effected naturally, as dilatation was not complete. Dunlop²_{May 6, '94} also lost a case from cardiac disease during expression of the placenta, death occurring in two minutes, though labor had been normal.

Friedberg⁴_{No. 4, '94} observed albumin, after labor, in the urine in 58 out of 130 cases examined. Of these, 7 were albuminuric during pregnancy, the rest being affected only after delivery. Friedberg believes, with Aufrecht, that the cause of this albuminuria is to be found in the uterine contractions and the contractions of the muscles of the thorax and abdominal wall, while the glottis remains hermetically sealed, provoking a general venous stasis, a passive congestion of the kidney. This stasis is the direct cause of the passage of albumin into the uriniferous tubules. He explains in this manner the more intense and more frequent albuminuria found in primiparæ. A. M. Easterbrook³⁶_{Mar., '94} relates a case of pronounced albuminuria in a primipara, with generalized anasarca, without eclampsia, and followed by recovery.

Maternal Complications.—J. H. Glenn⁶_{Oct. 7, '93} relates a case of rupture of the symphysis pubis in a multipara who had already had three children. No interference had been attempted, delivery occurring after six hours. Pressure upon the fundus had been made by the student in charge. Fever followed, with death in eighteen days. At the autopsy rupture of the symphysis was discovered, with suppuration, of a tuberculous nature, between the two cartilages.

Maygrier¹⁹⁴_{May, '94} observed a case of symmetrical perforation of the labia minora during labor, due to the abnormal development of these parts and the force of the pains, the labia becoming dis-

tended over the foetal head at the moment of the last contractions. Everke ³¹⁷_{Nov. 8, 44, '94} reports a case of complete laceration of the vagina during labor, and Schick ⁸⁸_{Nov. 29, '93} one of rupture of the vaginal arch. J. Ritchie saw prolapse of the bladder in an absolutely normal case of pregnancy and labor. Baudry ⁴⁸_{July, '94} publishes a case of rupture of the recto-vaginal septum during labor, without rupture of the perineum, one hand of the child presenting by the anus. Immediate suture was followed by recovery. The patient had previously had an abscess of the posterior vaginal wall, which had opened spontaneously and discharged a small quantity of pus.

Roche ²⁰³¹_{'94} concludes that subcutaneous emphysema in labor is a rare accident due to rupture at some point of the respiratory passages from violent effort. It is favored by tuberculosis or by emphysema existing before labor, and developed under the influence of active or passive congestion of the lung. It may also be the result of attacks of eclampsia, and, in rare cases, has been known to follow uterine rupture. It is most frequent in primiparæ and on the right side. When emphysema is present it is desirable to terminate labor as rapidly as possible in order to prevent further extension of the affection. The prognosis of the disease itself is favorable, but depends upon the affections to which it is allied. It has no influence upon the course of the puerperium. Bartlett ¹⁹_{Aug. 4, '94} publishes two fatal cases of general suppurative peritonitis consecutive to the rupture of a pyosalpinx during labor.

Foetal Complications.—Simpson ³⁶_{Apr., '94} gives notes on a case of labor with exomphalos of the foetus, the abdominal wall, from the thorax to the pelvic floor, being completely absent, leaving bare the liver, stomach, and intestines, this part presenting during labor. A diagnosis was not made, but the condition resembled a rupture of the uterus. Clairfont ²⁰³¹_{'94} states that, when in vertex presentations the presence of a sero-sanguineous protuberance is ascertained, the diagnosis should be made with great care, as this tumor, the effect of a long and painful labor, may retard or modify the course of the delivery and particularly interfere with rotation. It is best, therefore, not to wait until the tumor becomes too voluminous, but to have recourse to Tarnier's forceps two hours after dilatation is complete.

Funke ³¹⁷_{Nov. 31, '94} has observed a case of spontaneous intra-uterine

rupture of the funis, for which no other cause could be found but the sudden issue of the amniotic fluid. Audebert¹⁸⁸_{Jan. 7, '94} relates a rare case of expulsion of the chorio-amniotic sac before labor. At the moment of a strong pain a soft mass, the size of a fist, was expelled and found to consist of membranes inclosing a certain quantity of dark-green amniotic fluid. When this had flowed out the amnion was seen in the middle of the wall, separated from the chorion by an interval of about five centimetres, containing a rosy liquid entirely different from the amniotic fluid. The two membranes were united throughout the rest of their surface, and the sanguineous fluid lodged between them would not escape even on pressure.

Inversion of the Uterus.—Remy²³⁶_{Apr. '94} discusses the pathogenic mechanism of recent puerperal inversion, establishing three divisions: 1. Inversion immediately followed by delivery of child, due to some anomaly of the factors producing expulsion, as loss of contractility and retractility of the uterus from inertia or a peculiar thinness of its walls; to a single voluntary effort determining the expulsion of the child; to shortness of the cord, causing traction on the uterus, the uterine sac being reversed by two factors,—the vacuum created by the descent of the child and pressure by the intestinal mass spread over its surface. 2. Inversion coming on during delivery, due to pressure of the intestinal mass, voluntary effort, pressure with the hand upon the fundus, or to a special disposition of the uterus, as inertia or adherent placenta. 3. Inversion due to traction exercised on the cord.

I. S. Haynes¹_{Dec. 30, '93} was called to see a II-para delivered by a midwife and suffering from severe pains, followed by the appearance of a tumor at the vulva. This proved to be the uterus, and the author made manual reduction in twenty minutes, there being neither shock nor hæmorrhage before or after the operation. The patient recovered. Way²⁶⁷_{Dec. 15, '93} relates two cases of uterine inversion. In the first the uterus followed the after-birth, which was expelled immediately after the child by a violent contraction. Immediate reduction was easily performed. The second case was one of chronic inversion. R. K. Archer²⁶⁷_{Dec. 15, '93} records a case in which a very slow labor was terminated by forceps. After section of the funis the hand placed on the abdomen could not detect the uterus, and it was found to be completely inverted and still attached to the

placenta. There was considerable hæmorrhage following the detachment of the latter, but manual reduction of the uterus was easily effected. Septicæmia occurred, but the patient recovered. J. Montgomery ³²_{Mar., '94} reports the case of a primipara in labor. Delivery being tardy, the midwife made traction on the cord and on the abdominal wall. The placenta descended, but could not be extracted. Being called, the author found inversion of the uterus, the placenta covering the fundus and being very adherent. Not a drop of blood had been lost. It was easily replaced and recovery was rapid. Péraire ⁴⁸_{Aug., '94} describes a case of complete inversion, with prolapse, after delivery. Abundant metrorrhagia placed the patient's life in danger, but reduction was followed by recovery. The accident was due, according to the midwife, to efforts to expel the placenta. A. Schofield ²_{Mar. 24, '94} records a case of complete inversion in a primipara three days after delivery, with recovery, and Nason ³²_{May, '94} a similar case in a multipara, with death from shock.

Rupture of the Uterus.—F. T. Hindle ²_{Feb. 10, '94} observed a case of rupture of the uterus during labor, with passage of the ovum, membranes, and placenta intact into the abdominal cavity through a large tear in the anterior wall of the uterus. Laparotomy was performed, but death occurred four days later. The presentation was vertex, and labor had seemed about to follow a normal course. Vasten ⁴⁸_{Oct., '93} cites a case in which the placenta passed into the abdominal cavity. The child was extracted with forceps, and laparotomy and amputation of the uterus was followed by recovery. It was the ninth labor of the patient. Dohrn ³¹⁷_{Mar. 17, '94} records a case of rupture in a shoulder presentation during attempts at turning, the fœtus entering the abdomen. The vagina was tamponed with iodoform gauze, and spontaneous recovery occurred. Edmund Scott ⁶¹_{May 19, '94} records a fatal case, and Loin ²³⁶_{July, '94} two cases,—one fatal. Borelius ¹⁶²_{p. 44, '94} describes the case of a multipara in labor for fifteen hours, when rupture of the uterus occurred. Laparotomy was performed seventeen hours later, and the fœtus and placenta found in the abdominal cavity. Silk sutures were employed, and the case ended in recovery. Uterine rupture is generally accompanied by severe symptoms, and in such cases Labusquière ⁴⁸_{Aug., '94} states that, whenever possible, labor should be naturally terminated, but without violence, using all or any obstetrical operations which may render extraction easy and avoid injury to the maternal tissues.

When this is impossible, laparotomy should be performed as carefully as possible, in spite of inexperience.

THE PLACENTA.

Placenta Prævia.—T. S. Roberts ¹⁰⁵_{June 15, '94} reports a case of placenta prævia in a woman who had previously had various uterine diseases. Reaching term after a normal pregnancy, she was suddenly taken with severe hæmorrhage, and, on examination, placenta prævia centralis was recognized. Tampons were followed by artificial dilatation and turning, and a living child was extracted, the mother dying from acute anæmia two hours after delivery. Van Hassel ¹⁶²_{Jan., '94} reports a similar case, with profound anæmia. Tampons and ergotine were employed, pyæmia being followed by recovery at the end of four months. J. Payraud ²⁰³¹_{'94} considers artificial rupture of the membranes indicated under the following conditions: When the presentation is favorable and there is nothing to interfere with the engagement of the fœtal parts; in lateral, marginal, or partly-marginal insertion of the placenta; when syncope is not to be feared; when the child is living; when labor has begun and there is sufficient dilatation of the cervix. The method may also be of service in other cases, but the indications are not so clear and the results not so certain and even dangerous. Freudenberg ³¹⁷_{No. 20, '94} also recommends rupture of the membranes and turning in cases of placenta prævia. H. MacAndrew ⁵⁵⁷_{Jan., '94} reports a case of placenta prævia and hæmorrhage, ending in death, the interesting feature of which was the fact that the mother and two sisters of the patient had died from hæmorrhage following delivery. This was certainly more than a coincidence.

M. Berga ⁶¹³_{Dec., '93} performed Cæsarian section in a case of twin pregnancy complicated with placenta prævia and atresia of the cervix. Both children died, but the mother recovered. F. Cheney, ⁷⁷_{Feb., '94} in a case of placenta prævia, ruptured the membranes, and, prolapse of the funis occurring, he pushed it back with the hand, under chloroform, the patient being in the genu-pectoral position. The child and mother did well. Varian ¹⁹_{Sept. 23, '94} observed a case in a uterus bicornis the septum of which was thick and resistant. The placenta was inserted upon this septum and closed the opening of the second uterus, which could easily be explored.

The labor being indefinitely prolonged and the condition of the patient becoming grave, Cæsarian section was performed and an eight months' fœtus extracted in a macerated condition, the death of the mother soon following. Grange Simons⁴⁵¹_{Jan., '94} reports three cases showing the rôle of cervical lacerations in the pathogenesis of placenta prævia.

C. W. Townsend⁹⁹_{Dec. 21, '93} states that, of 6700 labors at the Boston Lying-in Hospital in the past 20 years, there were 28 cases of placenta prævia, or a proportion of 4 per cent. Of these cases marginal or lateral insertion occurred 15 times, partial insertion 8 times, and central insertion 5 times. The proportion of multiparæ to primiparæ was as 17 to 11. Three of the cases died, all having central placenta prævia; 5 children died and 6 were still-born. J. Campbell Edin¹⁹_{July 21, '94} states that in cases of placenta prævia centralis it is best to terminate pregnancy as soon as possible, arresting hæmorrhage by the introduction of the hand into the vagina and the index finger into the cervix and detaching the placenta as far as possible. The tampon he regards as a source of infection and recommends rigorous antisepsis, manual dilatation, and bipolar version whenever possible.

Detachment of the Placenta.—Bué²³⁶_{p. 481, '94} reports two interesting cases of premature detachment of the placenta, with delivery at term. Hache⁵⁷⁷_{Mar., '94} presented a placenta, from a multipara who had never had metritis, showing traces of hæmorrhage due to incomplete detachment. There were large fibrous plaques, about half a centimetre thick, all in about the same degree of evolution. Albumin had never been observed in the urine. Hache believes that these hæmorrhages depend rather upon an endometritis than upon infarcts.

Retention of the Placenta.—Robertson¹⁹⁹_{June, '94} records three cases in which the placenta was not expelled until the fifth, seventh, and eleventh day, respectively, without causing any accidents. Poirier²⁰³¹_{'94} discusses the treatment of partial retention of the placenta after delivery. The *débris* remaining should be removed with the hand, and, if the adhesions are too strong, the curette should be used, carefully guided with the finger. It should also be used in cases where the hand cannot be introduced and where there are symptoms of septicæmia. Intra-uterine injection or an antiseptic solution should be employed immediately afterward,

and the uterus tamponed with iodoform gauze. Porro's operation should be reserved for cases in which the placental tissue is strongly adherent to the uterine wall, and when all other suitable measures have been tried to prevent infection.

Gilis ²³⁶_{Aug., '94} describes a case of retention and adherence of the placenta with spasm of the uterus, the placenta being delivered eleven hours after the child. The author regards uterine spasm as a grave complication in such cases, preventing the obstetrician from ascertaining the degree of adherence present and retarding delivery. When the placenta is adherent to the anterior surface of the uterus, artificial delivery is most easily effected with the pulps and the nails of the fingers, beginning in front at the cervix and proceeding toward the fundus.

HÆMORRHAGE.

E. Todd ²⁶⁷_{Oct. 15, '93} observed a case of internal hæmorrhage between the placenta and the uterine wall in a primipara. The cervix was dilated with the hand and the child extracted with forceps, blood following in clots. The hæmorrhage did not recur, but, though the patient appeared to be saved, she died an hour later. C. Donaldson ²_{Dec. 9, '93} reports a case of internal hæmorrhage of an alarming nature in a multipara, after a fall. The cervix was artificially dilated with the fingers and an asphyxiated child extracted with forceps. The state of the mother was such that all attention was given to her and no effort was made to resuscitate the child. The woman recovered. Thornton, ¹⁹²_{Sept., '94} in a case due to traumatism, saw death follow, one hour after delivery. Donald, ⁹⁰_{Sept., '94} in a case in which the pains were absent and the state of the patient serious, dilated with Champetier's bag, ruptured the membranes when dilatation was complete, and extracted a dead child with the forceps. Immense blood-clots followed the placenta, the largest being the size of the child. The hæmorrhage was arrested, but the mother died thirty-six hours after delivery.

J. Trahan ¹²_{June, '94} reports a case of death from post-partum hæmorrhage in spite of the employment of injections, tampons, etc. He attributes the accident to malaria, the patient having had intermittent fever; to hyperdistension of the uterus by a large quantity of amniotic fluid; and to the presence of twins. Hermann states ²_{Dec. 16, '93} that transfusion of blood in severe cases of hæmorrhage

is useless and often dangerous. Water, with or without salt, may always be employed, the quantity injected being equal to the quantity of blood lost. Enough should be injected to make the pulse felt at the wrist. The severest cases demand as much as 6 pints (3 litres). No patient should be allowed to die from severe hæmorrhage without an attempt being made to save life by transfusion. In less severe forms, where the patient is in a low condition, but not pulseless, injections of from 2 to 5 pints (1 to 2½ litres) should be made to avoid secondary syncope. Moderate cases of hæmorrhage must be judged individually, but when in doubt it is better to employ transfusion; many of these cases, however, will rally after copious watery injections into the cellular tissue between the shoulder and other parts and into the rectum. H. S. Lott ⁴³_{Jan., '94} publishes four cases showing the good effects of subcutaneous injections of morphine in post-partum hæmorrhage; he, however, also gave ergot.

MATERNAL DYSTOCIA.

Vicious Pelvis.—A. Fritsche ¹⁰⁵_{July 1, '94} states that the kyphotic pelvis is rarely met with and is easily diagnosed by measuring the pelvic outlet after the manner of Breisky. Operative measures are almost always necessary to complete delivery, the forceps being usually sufficient, or, if there be too much resistance, perineo-vaginal incisions. If both fail, symphysiotomy, Cæsarian section, or craniotomy must be considered. Lardennois ¹⁹⁴_{July 12, '94} observed a spontaneous and easy delivery in a primipara with a kyphotic pelvis and marked narrowing of the inferior strait. Pignolet ²⁰³¹_{'94} is of the opinion that such narrowing of the inferior strait may greatly interfere with labor, particularly antero-posterior narrowing due to ankylosis of the coccyx, to exaggerated prominence of the sacrum in front, to tumors, or to exostoses. The best mode of treatment is the use of the forceps if labor do not terminate spontaneously. This method has always succeeded in my own hands.

The subject of most interest to authors appears to be the management of cases of contracted pelvis. Charles ²⁵⁶_{Apr. 22, '94} believes that each case presents special indications, and that, if the woman be at term, the expectant plan should be followed above eight centimetres and, if necessary, supplemented with the use of the

forceps or turning. In case of failure, recourse should be had to symphysiotomy or cephalotripsy, according to the state of the mother and that of the child. Before term labor should be induced between eight months and eight and one-half months. These ideas correspond to those expressed by me at the meeting of the French Obstetrical Society, in April, 1893.

Coulhon¹⁰⁰_{Feb. 6, '94} describes a case of rachitic scoliolordotic pelvis in complete anteversion, with narrowing of the antero-posterior diameter to five and one-half centimetres. The first labor had been at term, cephalotripsy having been performed. The second was also at term, spontaneous, in the right lateral decubitus, the head not being deformed, a living child, weighing 5350 grammes (10 pounds), being born; the biparietal measurement was nine centimetres and the bitemporal seven centimetres. This inequality was explained by the difference in the two sides of the pelvis and the situation of the promontory, which was raised and projected forward. The author concludes that a vicious pelvis with marked deformity may oppose an insurmountable obstacle to the passage of the child in the first labor and may not at all obstruct the second. Consequently, the prognosis of the second labor should not be based on the first. Parturition may be very easy, even with a greatly-reduced antero-posterior diameter, and a mere knowledge of this diameter is not always sufficient to enable one to estimate the possible course of events. A complete and minute study of the pelvis is necessary in cases of deformity. E. Purslow³²_{Oct., '93} reports the case of a woman who had already had 10 pregnancies, —5 terminated by craniotomy, 4 induced prematurely, and 2 terminated by the application of forceps, with living children. The eleventh labor was induced by douches of hot water; but, as labor did not come on, an elastic catheter was introduced, the child being born five days later and living thirty-six hours. Fraipont²⁹³_{Feb., '94} had a case in which the pelvis measured eight and one-half centimetres. The forceps and podalic version were employed without result. The neck of the child was broken by excessive traction, the head remaining in the uterus and being extracted with difficulty. The patient recovered. In another case, in which the pelvis measured eight centimetres, the bag of waters ruptured prematurely and ante-partum infection occurred. The forceps was used and a slight perforation of the lower part

of the uterus accidentally made. The patient died from septic metropéritonitis.

Bodo Luigi⁹⁹⁷_{Sept., '94} describes a case of rachitic circular pelvis, due to double iliac luxation, in a woman who had twice been delivered spontaneously at term. He concludes that bilateral iliac luxation of the femurs, in a woman with rachitic pelvis, produces the circular form of the superior strait by destroying the effects of kyphoscoliosis of the vertebral column.

Tumors.—Hope Walker²_{Jan. 13, '94} speaks of a multipara in whom an hæmatoma of the left labium, as large as a fœtal head, prevented the expulsion of the child. Walker applied the forceps, under chloroform, and, under the influence of traction, the bloody collection ruptured and a large clot escaped, which was not followed by hæmorrhage. The child was living, and the course of the puerperium was normal. The woman had never suffered from varices.

J. Dewart⁶_{Jan. 6, '94} observed a case of pregnancy complicated by cyst of the ovary which, at the moment of labor, prevented the expulsion of the fœtus. The forceps was used and the child delivered, but, before the head appeared, the tumor had been expelled by the rectum, being still attached to the pedicle, which was ligated. The patient suffered from subacute peritonitis for six weeks, but slowly recovered. The cyst weighed $1\frac{1}{2}$ pounds (750 grammes). Before the use of the forceps palpation had not revealed its presence in the lesser pelvis.

Paquy²⁴_{Nov. 26, '93} cites two cases of cancer of the uterus, with labor at term and living children. In the first, two operations had been performed on the cervix,—one in the fourth, the other in the seventh month of pregnancy. Labor was accomplished in six hours, while in the second it lasted fifteen hours, though no intervention was necessary. R. Jeffrey¹²⁹_{Sept., '94} reports a case complicated by sarcomatous tumor, with hæmorrhage during dilatation, due to fissure of the tumor. The forceps was used, and labor was accompanied with profuse hæmorrhage. The tumor was removed and a pathological puerperium followed.

L. Hilsmann,¹⁹_{Jan. 20, '94} in a case of labor arrested by occlusion of the uterine orifice, found a small depression on the cervix into which he inserted an ordinary uterine sound, following this with a dilator. When he had dilated the cervix sufficiently to pass the

index finger, he completed dilatation with the fingers, labor terminating spontaneously. The child was dead, but the lying-in period was normal. Von Dittel³¹⁷_{No. 25, '94} reports a case of labor with double uterus and vagina, the septum in the latter opposing no great obstacle to delivery. The child presented by the shoulder. L. Oliphant⁵_{Sept., '94} reports a case of occlusion of the vagina, in a primipara, by a sort of diaphragm, probably of congenital origin. Two small incisions were made on each side. He also describes²¹³_{July, '94} another case of a diaphragm pierced by an opening admitting a sound and sufficiently dilatable to allow the passage of the finger. The patient had had scarlatina when quite young, but no symptoms attributed to the vagina had ever been remarked.

Schuhl²³⁶_{pp. 94, 546, '94} states that reduction of the gravid uterus may present difficulties due to two causes: the excessive volume, which, at a certain moment, can no longer be pushed outside the cavity of the pelvis, or to adhesions of the organ. He describes a case in which the difficulty of reduction was due to this latter cause and which seems to show that adhesions, softened by gestation, may rupture in certain cases, the more easily as the pregnancy advances.

Tarnier³⁵_{May, '94} discusses the treatment indicated in uterine inertia. The forceps should be employed, and if, as may be feared, post-partum hæmorrhage supervene, the right hand, rendered thoroughly aseptic, should be introduced into the uterus, in the form of a cone, and inserted as far as possible into the fundus. The fingers should then be separated and the clots removed, the left hand being applied upon the uterine globe. An injection of very hot water should be used to complete the operation.

Markowitch²⁰³¹_{'94} presents an interesting study on dystocia due to retraction of Bandl's ring, called also the uterine circle of Baudelocque or contraction ring. The diagnosis being made, the author advises the following treatment: If the child is living, try, with the greatest caution, version by the shoulder or apply the forceps (head first or last) after having attempted Mauriceau's manœuvre, aided by manual abdominal compression. Be prepared for failure, and cease the attempts in time. If the child is dead, which is usually the case, perform rachidian embryotomy in shoulder presentations, and basiotripsy, with Tarnier's instrument, in vertex or breech presentations. In cases of adherent placenta deliver

artificially with great care, removing all clots which may be in the uterine cavity. After operation use an intra-uterine injection of Tarnier's iodo-iodized solution.

Fœtal Dystocia.—Charles ²⁵⁶_{Jan. 28, '94} recommends, in cases of hydrocephalus with after-coming head, the procedure of Van Huevel and Leroux as the easiest and most logical. This consists in section of the vertebral column and the introduction of a sound into the spinal canal as far as the skull, allowing the liquid to flow out. This method has long been indorsed by most authors. Bonnaire ²⁴_{Mar. 4, '94} reports a case of hydrocephalus, with deficient amnion. The skull was perforated with Potain's aspirator, labor taking place spontaneously. There were mechanical malformations of the skeleton, which the author attributed to the absence of amniotic fluid. The pelvis was of a pseudoscoliotic form. Fetherston describes ²⁸⁵_{Dec. 15, '93} a case of hydrocephalus in which the parturient remained in labor for four days, when the pains ceased for two days and then became exceedingly violent and accompanied by considerable loss of blood and collapse. A diagnosis of uterine rupture was made and the child extracted by version. The placenta had passed into the abdominal cavity. Laparotomy was performed and the uterus removed, the case ending in satisfactory recovery.

Fraipont ²⁹³_{Feb., '94} describes a case of labor complicated by placenta prævia, hydrocephalus, and hydramnios. Podalic version was performed and the head extracted with great difficulty, the fœtus being enormous. There was considerable hæmorrhage and uterine inertia due to hyperdistension. The woman died in spite of all the measures employed, intra-uterine tampons proving ineffectual. Bejan ²²³_{No. 4, '94} publishes an interesting study of labors complicated by hydrocephalus. Jaggard ²_{Aug. 11, '94} observed complete absence of amniotic fluid in a IV-para, the child being deformed and living only an hour.

Chaleix ¹⁸⁸_{Dec. 17, '93} cites a case of dystocia due to exaggeration of the bisacromial diameter of the fœtus. Sometimes the shoulders in such cases are arrested at the entrance to the hollow of the pelvis and sometimes, though more rarely, the head leaves the maternal parts spontaneously, but the shoulders are too large to permit the exit of the trunk. The author's case was of the latter variety, and by disengaging the posterior shoulder first he was

able to deliver a living child weighing 5100 grammes ($10\frac{1}{4}$ pounds) and 55 centimetres long, the biparietal diameter being 11 centimetres and the bisacromial diameter 17 centimetres. Chalfant¹⁸⁶_{July, '94} delivered a child weighing 18 pounds (9 kilogrammes), both mother and child living. Von Woertz³¹⁷_{No. 5, '94} gives the history of a labor arrested by a subaxillary lymphangioma of the fœtus, which was extracted with difficulty and did not live. Schwyzer⁹⁵_{B. 45, p. 333} describes a case of dystocia due to great distension of the urinary apparatus; the trunk could not be delivered until the abdomen of the child had been punctured. Walther³⁹³_{B. 27, H. 2} cites a case of the same nature, the bladder being developed in an extraordinary manner. There was but little amniotic fluid, and the macerated fœtus, presented by the feet, being extracted with difficulty on account of the dilatation of the bladder and ascites. There was, besides, considerable malformation of the rectum and genital organs.

Kassinski¹⁶²_{Mar., '94} describes the case of a woman with contracted pelvis in whom version was performed, the excessive traction causing the head of the fœtus to become separated from the trunk. It was left in the uterus and for eight months the patient was in an almost dying condition. In the ninth month she entered the service of Kassinski, who performed abdominal hysterectomy, the woman recovering.

Charles²⁵⁶_{Oct., '93} relates two cases of retention of the dead fœtus in the uterine cavity. The diagnosis having been made, labor was induced, with satisfactory results.

Hogner¹⁶²_{p. 42, '94} gives notes of the case of a woman, aged 37 years, with normal pelvis, who had had two previous difficult labors, with large fœtus, and who, on becoming pregnant for the third time, underwent for three months a treatment to make her thin; at the end of that time she gave birth spontaneously to a very thin and small child weighing 1700 grammes ($3\frac{1}{8}$ pounds).

Grandin⁵⁹_{June 9, '94} performed version in a case of contracted pelvis. The foot was at the vulva and the head still in the upper part of the uterus when the child was heard to cry distinctly each time traction was made on the feet. This cry was heard by Grandin, Marion Sims, and two nurses. As soon as the trunk was delivered the child ceased to cry. It was asphyxiated, but was very soon resuscitated.

FUNIS.

Allen ⁷⁸⁶_{Sept., '93} reports three cases of shortness of the cord. In the first case violent efforts to expel the head were without result, and Allen introduced two fingers into the rectum and pressed upon the chin. The head being delivered, the trunk resisted, and traction upon the head was then necessary, though uterine inversion occurred, the placenta remaining attached to the fundus. It was impossible to deliver the child without either rupture of the umbilical cord or inversion of the uterus. The case ended favorably. Gallois ³¹_{Jan. 6, '94} attributes a case of uterine inertia seen by him to pulling on the cord, which was but thirty centimetres in length, causing the cessation of pains. J. V. Dudley ¹⁰⁵_{Oct., '93} reports a case of labor complicated by a very long cord, the child dying. In a case seen by L. Dickinson ¹⁵⁷_{Apr., '94} the umbilical cord was twisted about each ankle, tying the feet together. Griffith Swaine ¹³¹_{Dec., '93} attributes a certain number of deaths in cases of intervention by the forceps to compression of the umbilical cord by the blades of the instrument, especially where there are twists in the cord. Garver ⁵⁶_{July, '94} describes a case in which the fœtus died twelve or fourteen days before labor in a healthy II-para. The cord was twisted twice about the neck and knotted, and to this fact the author ascribes the death of the child.

PREMATURE LABOR.

Puech ¹⁶²_{Mar., '94} expresses the opinion that premature labor should be induced in cases of albuminuria, not only in the interest of the mother, but in that of the child also. Bossi ⁹⁴³_{p. 409, '94} reports two cases of artificial induction of labor followed by symphysiotomy. In the first case the true conjugate of the pelvis was seventy-two millimetres. The patient died on the fourteenth day. The second patient had a flat, rachitic pelvis with a true conjugate of sixty-seven millimetres, and the pregnancy was prolonged, the fœtus being excessively developed. The cervix was artificially dilated and the forceps applied to the superior strait. Bossi agrees with Morisani in advising against the induction of premature labor associated with symphysiotomy in contractions below sixty-seven millimetres, for the principal reason that the child is liable to perish before birth, or, if living, is born under most unfavorable circumstances.

Boissard has invented a new dilator for the purpose of inducing premature labor, which is described by one of his pupils, —Nagib Eddé.²⁰⁸¹₉₄ The small size differs from Tarnier's dilator in its curved conductor and in its greater capacity. The large model differs from the Champetier de Ribes bag in its smaller size and especially in the hollowed-out shape of its superior surface. The small size is used in the primipara, and, if labor is too slow or the indications are toward its rapid completion, the large size is substituted. In multipara it may be used from the beginning. Tarnier's retractor is a valuable adjuvant when the pains lessen or disappear and when the cervix is completely or almost completely effaced.

Greuet²⁰⁸¹₉₄ studies theoretically and critically the principal means of invoking and accelerating dilatation of the cervix, and draws the following conclusions: Artificial premature delivery is indicated in pelvic contraction whenever the subpubic diameter is at least nine centimetres, providing the deformity is most pronounced at this diameter and the condition is normal elsewhere. Symphysiotomy or Cæsarian section is applicable in more complex cases or when examination is not made until too late. Tarnier's bag-dilator is the instrument of choice to provoke the pains. His retractor should be employed when the pains weaken or cease after the expulsion of the dilator. It should be replaced by the Champetier de Ribes bag if there is a vicious presentation and if turning is impossible. Either instrument may be employed from the beginning in cases where the cervix is too permeable to permit the Tarnier dilator to remain in the uterus. The retractor is indicated to hasten labor in vertex presentations, and is contra-indicated in the presence of voluminous fibrous growths or cancerous degeneration of the cervix, as well as in hæmorrhage due to vicious insertion of the placenta. Here the Champetier or Barnes bag may sometimes be used to advantage, the former being indicated when the fœtus is dead and the membranes ruptured. When there is rigidity of the cervix it is better not to wait until the temperature rises, but to make incisions. Baths are not without danger and should be given with caution; they may be replaced by hot applications upon the abdomen in uterine inertia. Forced labor may be practiced when the neck of the uterus has a normal power of resistance.

FORCIBLE DELIVERY.

J. Rosenberg⁵⁹_{Mar.10,'94} makes a plea against the employment of *accouchement forcé* in placenta prævia. S. Marx,⁵⁹_{Feb.17,'94} on the other hand, has had good results from the method. He introduces tampons and follows them with manual dilatation of the neck, or omits the tampons when there is no hæmorrhage. E. Gagey⁵⁵_{Mar.17,'94} publishes a lecture by Tarnier upon the possibility of performing methodical rapid delivery in women in the death-agony or post-mortem. Tarnier believes that in such cases, even when the cervix is not dilated, *accouchement forcé* should be practiced; but, as this name has been adopted for a method of delivery much in discredit, he proposes to call his plan rapid methodical delivery. An instance is given in which the method was practiced by Dmelin on a patient with heart disease, *in extremis*, both mother and child being saved. F. Verardini,⁹³⁴_{June,'94} states that immediate forcible delivery by the natural passages is easily accomplished in dying women, even in primiparæ and where the neck is closed, provided the woman is well formed and there are no special pathological conditions to encounter. The after-effects have never been found harmful in the author's experience, while the infantile mortality is less than by Cæsarian section.

FORCEPS.

Budin,²³⁶_{p.511,'94} discusses the use of the forceps in cases of vicious rachitic pelvis. In flattened contracted pelvis, according to the antero-posterior diameters and under the influence of the pains, the head (1) lies transversely; (2) it is deflected; (3) it inclines generally toward the posterior parietal side; (4) it executes a swinging movement about the sacro-vertebral angle and frees the promontory; (5) it rotates in the hollow of the pelvis; (6) it frees itself under the pubis according to its suboccipital diameters. If labor do not terminate, two things may occur,—either the head may remain mobile in the superior strait or it may become fixed across this strait, in which it tends to engage. If it remain movable the application of the forceps is difficult, and many physicians prefer to introduce the hand and turn. If it tend to engage in the superior strait, but the pains are not sufficiently strong to determine its passage, the use of forceps is advised, directly or transversely, antero-posteriorly or obliquely. The

direct application is correct in relation to the pelvis, the more so as it permits of making traction in the axis of the superior strait. It is defective in relation to the fœtus, as the head is seized from the forehead to the occiput and the transverse diameters are increased and become irreducible. In antero-posterior application no account is taken of the form of the blades destined to adapt themselves to the pelvic curve, and, further, traction cannot be made in the axis of the superior strait. As to the fœtal head, if an effort be made it can be seized correctly, it is true, but, when it has been lifted and moved, instead of the bitemporal diameter—the smallest and most reducible of the transverse diameters of the head—it is the biparietal—large and scarcely reducible—that we must try to pass through the contraction. We are thus departing absolutely from the natural mechanism of labor in flattened and contracted pelves, and in displacing the head we lose the benefit of the plastic deformations which it has already undergone, while the application of the blades to the raised and movable head is often difficult and their pressure on the promontory and the posterior surface of the pubis not always inoffensive. The oblique applications made in the superior strait are analogous to those often practiced in the pelvic hollow. Relative to the pelvis, they are not always perfect; the tractions are not absolutely in the axis, but the applications and the tractions both approach perfection. As to the head, if it is not seized by the biparietal diameter it is seized by an oblique diameter approaching it, and is held firmly. The head tends to pass by the biparietal diameter, and, as it has not been displaced, we have the benefit of the existing deformities or the reduction already produced during labor. A new force is simply added to the uterine contractions without changing existing conditions,—a force which is generally sufficient to terminate delivery. Oblique applications are thus shown, both by clinical observation and experimental research, to be preferable in cases of vicious and flattened pelvis when the head is fixed in the superior strait.

Accidents from the use of the forceps are not rare, either in mother or child. Schönberg¹⁶²_{p. 41, '94} applied forceps in delivering a woman 38 years of age. After a few tractions a cracking sound was heard, and when the child was born the symphysis was found to have separated a distance of one centimetre, and there was a

rupture of the vagina to the right posteriorly, through which the borders of the ischium could be felt.

Loisling¹⁶²_{p.41,'94} reports a case of a similar nature, the forceps being applied to deliver a large foetus, dead and macerated. Eight days later the author was called in and found a distinct rupture of the symphysis.

Cocq²³⁶_{p.536,'94} has studied the compression exercised by the forceps on the head of the child, and concludes that, in regularly contracted pelves and in generally contracted and flattened pelves, the application of forceps is but a disguised embryotomy if the transverse diameter of the superior strait or the hollow measures less than 11.5 centimetres. In fact, the occipito-frontal measurement being 11 centimetres and the blades of the forceps measuring at least 5 millimetres in thickness, the instrument would find a point of support on the pelvic ring, act as a lever, and cause considerable pressure on the child's head. Under these conditions version or symphysiotomy, according to circumstances, should be preferred to the forceps. Circumspection is also necessary in cases in which the pelvis is simply flattened and the true conjugate is less than 9 centimetres. If the instrument is applied according to the transverse diameter of the pelvis and the occipito-frontal of the child, it will shorten the occipito-frontal and lengthen the bi-parietal, which already measures 9.5 centimetres and which must pass the true conjugate,—less than 9 centimetres. To do this the head must diminish in size in various directions, which will not be without danger. Therefore, when there is considerable resistance the forceps should not be employed, but preference given to version or symphysiotomy, according to the indications.

SYMPHYSIOTOMY.

Dimante,¹⁶²_{p.230,'94} from experiments on the cadaver, concludes that in symphysiotomy there is also produced a movement of the sacrum about a transverse axis in such a way that its base is thrown backward and its apex forward, the antero-posterior diameter of the pelvis thus diminishing as the inferior strait is approached.

Sufficient time has now elapsed since the wide adoption of symphysiotomy by antiseptic methods to furnish data which will assist in estimating the permanent results of the operation. As

most of the patients requiring the operation are dependent on their work for a livelihood, it becomes a serious matter to ascertain the condition of health as regards ability to work which can be promised to those patients in selecting this operation. The reports from Schauta's and Gustav Braun's clinics by von Woerz and Richard Braun ³¹⁷_{Nov. 36, 37, '94} afford data of value upon this question. Von Woerz reports 10 symphysiotomies performed some time previously, most of the patients being still available for observation. Of the 10 patients 1 died of sepsis after the operation; 6 are in good condition, abundantly able to work without inconvenience; 1 could not be followed after leaving hospital care; 1 cannot stoop to work on her hands and knees without pain in the sacro-iliac joints; 1 suffered from incontinence of urine, which was cured by taking cold baths. Braun reports 8 symphysiotomies, and of these none died; 6 are now in good condition, working without inconvenience; 1 suffers from incontinence of urine and sacro-iliac pain on heavy lifting; 1 has incontinence of urine on straining and lifting. In von Woerz's cases 5 were treated by drilling the symphysis and wiring with silver wire; in 4 the wire suture could not be successfully applied; and 1 had no suture. While good union is possible without suture, yet suture is preferable. Braun treated his cases with drilling and wiring, 3; with suture of the periosteum, 4; and without suture, 1. There seemed to be no difference in the result in these cases. From these cases the conclusion may be fairly drawn that symphysiotomy under good surgical care is an operation undoubtedly saving foetal life at no serious risk of death or permanent disability to the mother. In view of the excellent results obtained without drilling and wiring the symphysis, the procedure is unnecessary.

Lambinon ²⁹³_{May, '94} reports a case of symphysiotomy combined with premature labor, practiced by Charles at the Liège Maternity upon a rachitic primipara, pregnant eight and one-fourth months, and whose pelvis measured six and one-half centimetres. The child died the following day. In the discussion which followed the reading of the communication Fraipont stated that symphysiotomy was an operation which might have serious consequences for the mother, and that at the same time it could, by no means, be called simple or easy of performance and within the reach of all obstetricians. To him it seemed no less dangerous than

Cæsarian section, and far from being indicated in the place of the latter. He insisted upon the necessity of applying the forceps in cases of moderately contracted pelves, thus avoiding symphysiotomies which were not legitimate because not necessary. Lambinon, while recognizing the value of symphysiotomy, protested with energy against the statement of Pinard, that induced labor should be abandoned in all cases in which symphysiotomy will permit the passage of the head of a fœtus at term. "It is illogical," he stated, "to incur the risks of a bloody operation in a woman who, like this patient under discussion, returns for the fifth time and is delivered of a living child through premature artificial labor." He protested against the abuse of useless operations, and declared that the value of premature labor was in no way affected by the success of symphysiotomy. The same was true of the Cæsarian operation, which begins where pubiotomy ends. This indication was formal. D. Longaker²³_{May, '94} is of an opposite opinion, and believes that henceforth induced labor is doomed to be replaced by symphysiotomy.

Pinard⁴⁸_{Jan., '94} gives the statistics of symphysiotomy at the Baudelocque Clinic during the year 1893. The operation was performed thirteen times,—nine times in multiparæ, four times in primiparæ, ten times in cases of contracted pelvis due to rachitis and somewhat regular, and three times in cases of asymmetry. One of the mothers died and all the children were living. Among the accidents were two cases of laceration of the anterior wall of the vagina communicating with the operation wound, in primiparæ; one case of injury to the neck of the bladder, with consequent vesico-vaginal fistula; and one case of incontinence of urine. No embryotomy was practiced on a living child, and no labor was induced. The following are the precepts laid down by Pinard: 1. Abandon provoked labor in all cases in which symphysiotomy will permit the passage of the fœtal head at term. 2. Abandon all use of forceps for bony resistance, whether in the superior strait, the hollow, or the inferior strait. 3. Absolutely abandon embryotomy on the living child. 4. Temporarily increase the size of the pelvis by symphysiotomy, ischio-pubiotomy, or coccygotomy in all cases in which the osseous resistance is not overcome by the contractions, in which the head is well situated, and in which it is estimated that section of the pelvis will permit

the passage of the head. 5. Perform utero-ovarian amputation in cases of extreme narrowness.

The same author⁴⁸_{May, June, '94} relates the cases of symphysiotomy practiced at Baudelocque from November, 1893, to March, 1894, ten in all, and presents the following conclusions: 1. Aseptic symphysiotomy, or pubiotomy, is an operation without danger. 2. To be useful it must be complete, and the preliminary separation of the pubes must be in proportion to the degree of pelvic contraction. 3. It must be attempted only in cases in which study of the pelvis has shown that a separation of seven centimetres will permit the passage of the head at term. 4. A separation of more than seven centimetres may determine injury of the soft parts and must be proscribed. 5. In cases where a separation of seven centimetres is not sufficient to allow the head to pass, Porro's operation should be resorted to. 6. In cases of oval oblique pelvis, with synostosis of one of the sacro-iliac articulations, when the contraction does not permit spontaneous delivery, —a fact which cannot be ascertained until labor begins,—ischio-pubiotomy should be performed, the obstetrician being previously prepared to do the operation if necessary. 7. In cases of ankylosis of the coccyx preventing spontaneous delivery, digital rupture or subcutaneous section of the coccyx should be performed. His general conclusions are that momentary enlargement of the pelvis, as practiced above, must cause the abandonment of premature artificial labor and all operations having for an object to oppose the foetal head against an osseous resistance not overcome by the pains, in favorable presentations. Embryotomy, crushing, or waiting for the death of a living child should be entirely proscribed.

From the discussion of the subject before the Eleventh International Congress at Rome, ⁶⁷³_{May, '94} Morisani, of Naples, expressed the belief that symphysiotomy is an operation now perfectly justifiable from a theoretical stand-point and from clinical experience. By its aid a well-developed and living child may be delivered when the pelvis measures from sixty-eight to eighty-six millimetres. If the foetus be dead, of course, symphysiotomy should not be practiced. The operation is indicated (1) when the labor is at term; (2) when labor is advanced; (3) when dilatation of the uterine orifice is almost complete. It has been advised to combine sym-

physiotomy with premature delivery, but in the present state of our knowledge this is not admissible. It would involve a new danger for the fœtus (there is now a great mortality at seven months), without absolute necessity. Embryotomy may sometimes be combined with symphysiotomy when the fœtus is dead. As regards the technique of the operation, the simplest and best method is that which Morisani has always used,—incision of the soft parts and the symphysis with a bistoury; if the symphysis is greatly ossified he uses a chain-saw. It is not of importance whether the section is made from above downward or the reverse. The subpubic ligament, however, should always be cut at the same time as the symphysis (contrary to the opinion of Leopold), and one should assure one's self that the bones are separated. Antiseptic precautions being taken, there is no danger to be feared but hæmorrhage; this may easily be arrested with gauze tampons. It is also easy to avoid lacerations of the bladder and vagina. If the true conjugate is eighty-one millimetres or more, it is best to begin by applying the forceps before practicing symphysiotomy; after the latter operation, delivery occurs normally in most cases; but, if the pains are too feeble, recourse should be had to forceps. As post-operative treatment, it is sufficient to apply a simple dressing and to maintain the limbs of the patients in such a position that the bones will be approximated. Foreign bodies should never be introduced between the lips of the wound.

If the fœtus is living, symphysiotomy should be preferred to embryotomy; and Morisani expressed the opinion that it would also eventually supersede Cæsarian section in cases where the latter is to-day the operation of choice. It is not yet definitely decided whether it is preferable, in cases of contracted pelvis, to perform premature delivery or to wait until the end of pregnancy and practice symphysiotomy. Ischio-pubiotomy is altogether different from pubiotomy as practiced by Aitken and Galbiati, and should be given the name of Farabœuf, who invented it. It constitutes a precious resource in cases of contraction due to ankylosis of one of the iliac symphyses (Naegelé's pelvis).

According to the author, his statistics are encouraging. Of 241 women upon whom he had performed symphysiotomy the mortality for the mother was 11.6 per cent. (and of this there were 6 deaths from intercurrent disease), and 48 of the children were

lost. The unfortunate results were due to the fact that contraction exceeded the limits just mentioned, the time of intervention was not well chosen, the technique was not perfect, or the condition of the woman was too grave. The death of the child was due either to tardy intervention, to accidental causes, or to the method of extraction.

Leopold, of Dresden, stated that symphysiotomy was now accepted by the obstetricians of the present day, but that it could not be used in general practice, and should be reserved for the clinic. Its dangers are too great to permit of its being substituted for embryotomy or version. It is sufficient to recall the hæmorrhages, vaginal lesions, and the difficulty of after-treatment. As to its indications, it may be practiced when the true conjugate is from 7.5 to 6.5 centimetres and even 6 centimetres. In the latter case, however, he prefers craniotomy, which he always advises when the practitioner has made every possible effort to extract a living child. If the pregnancy is not at term and the conjugate is less than 7 centimetres, premature labor should be induced. If the woman is at the end of pregnancy or in labor, complete dilatation should be awaited, without rupturing the membranes, and version attempted, followed by extraction. If this is not successful, symphysiotomy should be performed.

Sänger, of Leipzig, did not believe that the Cæsarian operation could be replaced by symphysiotomy. Of twelve cases of the former he had not had a single death. From an operative stand-point, Cæsarian section is much more quickly performed, while the after-treatment is practically nothing. It is sometimes necessary to wait a whole day for the opportune moment to perform symphysiotomy, and recovery is very slow. He believed, however, with Morisani, that it was indicated when the pelvis measured from six to seven centimetres. His opinion was that more Cæsarian sections and fewer symphysiotomies should be performed.

Zweifel, of Leipzig, said that if Leopold were correct in his view that symphysiotomy was not adapted to general practice, the operation had no future before it. He believed, on the contrary, that it was destined to become generally practiced, and he absolutely condemned embryotomy when symphysiotomy was possible. He accepted the limit of 6.5 centimetres as given by Morisani, and

advised transverse incision of the soft parts above the pubis and section of the bones with a bistoury, avoiding separation of the legs of the patient and applying an Esmarch bandage. In twenty-three cases of symphysiotomy he did not lose a single patient, and only two of the children died.

Varnier, of Paris, could not accept the opinion of Leopold, statistics showing that even in private practice many symphysiotomies were practiced with success. Induced labor gives a mortality of 30 per cent., while symphysiotomy gives but 9 per cent. The latter operation is also to be preferred to version.

Gaulard ²³⁶_{p.358,'94} supports the views of Budin, expressed at the last French Congress of Obstetricians, and states that symphysiotomy should be only the complement of artificial induced labor, though, like Bar, he believes that no absolute rule can be laid down.

Vallois ²³⁶_{p.661,'94} has studied the indications of the operation in forehead presentation. To permit the easy descent of the head when the maximum diameter remains parallel to the plane of the superior strait, but a slight separation of the bone is necessary. The diameter of the pelvis which must be increased is the transverse, and, according to Bouchacourt, this increase attains half the separation of the pubis in the whole length of the pelvis. Vallois concludes, from his experiments, which require clinical confirmation, that in shoulder presentations, when turning is impossible or dangerous, attempts to change into vertex or face presentations impossible, the efforts of nature powerless, and application of the forceps followed by failure, symphysiotomy is indicated if the child is still living and basiotripsy if it is dead. If the pelvis is more or less contracted the attempts with the forceps should not be continued so long, but symphysiotomy should be resorted to.

Charles Noble, ²⁰⁰¹_{May,'94} in an article on symphysiotomy *versus* induction of labor, claims that the operation should be preferred to premature delivery. Kufferath ⁵²_{June 30,'94} publishes four cases, and believes that, in spite of the good results obtained, symphysiotomy will not throw other operations into the shade, since each has its own distinct indications. Crouzat ¹⁰⁸⁸_{Oct.8,'98} relates an interesting case which shows that the forceps, when properly handled, may give excellent results in cases of rachitic pelvis. He does not think

that any absolute rule can be laid down for the performance of symphysiotomy, and holds that the champions of the method go too far in this direction. R. P. Harris, of Philadelphia, ²²_{Mar. 28, '94} gave the statistics of symphysiotomy in Europe and America, before the London Obstetrical Society. In the discussion Griffith stated that the discredit which may attach to the operation is due to its abuse. Personally, of three thousand labors under his care since symphysiotomy had been re-introduced into obstetrics, he had not found a single case in which it would have been justified or in which Cæsarian section would not have been preferable. Leith Napier, in four thousand labors a year, had not met with a single indication for its use in the past two years. Hermann believed that it should not occupy a place among the ordinary measures of difficult labor. His mortality with it had been 10 per cent. and that of Pinard the same. In Cæsarian section the results were as good in selected cases, and when it was opportunely performed the chances were as good for women who wished for a living child. Successful cases are reported by Carbonelli ⁹⁹⁷_{Feb., '94} and Toujan, ⁴⁸_{Mar., '94} in whose patient the pelvis measured seven and one-half centimetres and the infant weighed 4100 grammes ($8\frac{1}{5}$ pounds). Kirch ¹⁵_{June, '94} performed the operation on a woman aged 27 years, the true conjugate being from seventy-five to seventy-eight millimetres, and delivered the child with forceps. G. Gross ¹⁴⁷_{Sept., '94} reports a symphysiotomy performed on a II-para of 30 years. The true conjugate measured eighty-one millimetres and the child presented by the breech. The trunk was delivered, but the head could not pass and the child died. Symphysiotomy was performed, the case then taking a normal course. The first labor had also been a breech presentation, the child being born dead owing to prolapse of the funis.

Stadfeldt, ¹⁶²_{p. 42, '94} in a primipara of 26 years with a pelvis measuring eight and one-half centimetres, made fruitless attempts to deliver with the forceps and then separated the pubes, with happy results for mother and child. Tournay ¹⁶²_{p. 274, '94} reports a very similar successful case, in which the previous labors had been difficult. Auvard ²³⁶_{Dec., '93} failed with the forceps in a case of justo-minor flattened pelvis with a minimum diameter of eight and one-half centimetres. Symphysiotomy was resorted to, both mother and child living. Barton Cooke Hirst ¹¹²_{Feb., '94} reports the case of a rachitic primipara, in

labor for fifty-eight hours, in whom symphysiotomy and the forceps were used, mother and child living. In another rachitic primipara, aged 34, in whom the pelvis measured nine centimetres, induction of premature labor, artificial dilatation of the cervix, symphysiotomy, and version were followed by successful results. In a third rachitic primipara, four feet and one inch in height, pelvis measuring nine centimetres, induced labor, artificial dilatation of the cervix, symphysiotomy, and version were employed, the forceps having failed.

Lewers¹⁰⁷⁷_{Feb. 14, '94} reports the first symphysiotomy performed in England for contracted pelvis, child and mother living. In five previous labors it had been necessary to destroy the child in order to deliver the mother. Beusinger³¹⁷_{Feb. 17, '94} relates a successful case in which the pelvis measured eight centimetres. The patient left her bed in fourteen days, in spite of the absence of osseous sutures. Crimail⁴⁸_{p. 38, '94} and Ratschinski¹⁶²_{p. 230, '94} report successful cases. Wallich delivered a woman in her fifth pregnancy.⁴⁸_{Aug., '94} The head became fixed and could not pass the promontory, and antero-posterior application of the forceps was without result. Symphysiotomy was performed and a living child was extracted weighing 3810 grammes (7 $\frac{2}{3}$ pounds). It may be asked why the author did not try oblique application of the forceps, which in a previous labor had enabled the woman to be delivered of a living child weighing 3300 grammes (6 $\frac{2}{3}$ pounds).

Bidder⁴⁸_{Aug., '94} reported a case in which, after symphysiotomy and at the passage of the head, a transverse laceration of the right labium minorum continuing in the vaginal wall occurred, causing fever from suppuration in the lower angle of the wound. The child died eleven hours after birth. Viridarski¹⁰⁰_{Aug. 26, '94} communicates a case operated on by Ott, the pelvis being contracted in all its diameters. Osseous suture was not successful, and Ott's apparatus had to be applied and was being worn by the patient four weeks later, though otherwise she was well. Witherspoon extracted⁹_{May 5, '94} by symphysiotomy a living child weighing 15 pounds (6.8 kilogrammes), which died eight days later from diarrhœa. The operation was complicated by a rupture which began on the left side of the meatus urinarius and extended along the urethra, involving the bladder. The patient recovered. C. Cameron²³_{Oct., '93} reports three cases, in one of which there was laceration of the

perineum and local infection from one of the sutures and in the others incontinence of urine. Rothwell²⁸⁵_{May 20, '94} reports the first symphysiotomy in Australia, in a multipara who, in previous labors, had had one craniotomy, version for a child weighing 5 pounds (2.3 kilogrammes) which lived only an hour, and a prematurely induced labor followed by version, the child being still-born. In the fourth pregnancy labor was induced, the true conjugate being two and three-fourths inches. Symphysiotomy was followed by the forceps, and a child weighing $4\frac{3}{4}$ pounds (2.2 kilogrammes) extracted, which lived half a day. The woman thought herself at full term, but certainly was not. Hæmorrhage was abundant during the operation, but the patient recovered.

Davis⁹⁹_{Aug. 23, '94} reports the case of a woman at term, with normal pelvis. The head was in the right pelvic diameter and partially engaged, Nægelé's obliquity being more than normal. The forceps was used without result, and in performing symphysiotomy the cartilages were found to be partly ossified and difficult to cut. A living child was born. There was some elevation of temperature during the puerperium, due to thrombus of the right femoral vein. Cercha¹⁶²_{p. 185, '94} performed symphysiotomy on a woman 27 years of age, delivering a living child with forceps. Hæmorrhage was abundant, and after the operation there was found to be a rupture of the cervix on the right side, rupture of the vagina, of the bladder to the right and in front, with displacement of the urethra to the left, detachment of the clitoris, and rupture of the perineum. Fever persisted for four weeks, and there was a vesical fistula, but the patient finally recovered. Norris¹³⁸_{July, '94} observed cystitis, and later mania, in the course of the puerperal period, following symphysiotomy; Edgar¹_{Mar. 17, '94} observed hæmorrhage and a pathological puerperium in a case operated on by him; and Dickinson, laceration⁵⁹_{Nov. 25, '93} of the urethra and hæmorrhage. Thierry²⁰³_{June 1, '94} performed symphysiotomy upon a patient who had had two normal labors, the pelvis measuring nine centimetres. The forceps was of no avail, and after section of the pubis there was abundant hæmorrhage, due to rupture of the prevesical plexus. The head engaged in the occipito-sacral diameter and the lower part of the pubic region was much lacerated. The child was resuscitated. Fever followed from infection of the wound and an abscess formed, but the patient recovered. Treub¹⁶²_{p. 179, '94} delivered a living child by

section of the pubis in a woman whose first pregnancy had been terminated by cephalotripsy. There was abundant hæmorrhage during and after the operation. It was impossible to introduce the finger behind the symphysis, and a chain-saw had to be used. The patient died in half an hour from acute anæmia, and from this case Treub believes that symphysiotomy is not as benign an operation as many suppose.

Slayter ²⁸⁴_{Feb., '94} reports a case of death, fifty hours after the operation, in a woman, aged 24 years, in labor for three days. Koffer also reports a fatal case. ²⁵⁶_{Jan. 14, '94} During delivery a cracking sound was heard, apparently from the sacro-iliac symphyses. A severe hæmorrhage followed, and during the days following the patient complained of violent pain in the right thigh. Fever was observed on the third day and the lochia became fetid. Death occurred in four weeks, and disseminated abscesses were found in the lungs.

N. Fenomenoff ⁶⁷³_{Mar., '94} describes a method of maintaining permanently the separation of the pubic bones obtained by the operation of symphysiotomy, his idea being to avoid the necessity of repeating the operation at a future confinement. He removes a triangular piece of bone from the upper portion of the pubic bones and inserts it at the lower part where the separation is desired. His experiments were made upon the cadaver and a number of animals, the operation being easily performed. He has not yet tried it upon the living woman; and, as Kaplansky remarked in the discussion, it will be necessary to observe carefully its result upon animals, as regards the modifications of the genital organs which it may bring about, and its influence upon conception, before applying it as a therapeutic measure.

Neugebaur ²¹³⁴_{'94} establishes the fact that, of 278 operations practiced from 1887 to the end of 1893, 31 women died; that is to say, for every 8 women saved 1 is lost.

CÆSARIAN OPERATION.

Guéniot ¹⁰_{July 3, '94} presented two women who had each successfully undergone this operation twice, the four children being living. In one of the patients the antero-posterior diameter measured scarcely four centimetres. The author operated toward the end of pregnancy without waiting for labor to appear. Guéniot is not a

partisan of Porro's operation. J. Alland ⁶_{Mar. 31, '94} reports the case of a primipara on whom he was obliged to perform Cæsarian section, the forceps and cephalotribe failing. Death occurred on the fourth day. The impediment to labor was an ovarian cyst, discovered on opening the abdomen, instead of a distended bladder, as was supposed. Rabagliati ²²_{Nov. 15, '93} relates a case of Cæsarian operation for fibrous tumor, mother and child living. W. B. Dorsett ⁸²_{May 12, '94} applied the forceps in one case, but rupture of the uterus occurred, and, on Cæsarian section, the fœtus was found presenting by the shoulder, the head being enormous. The mother died. Bar ²⁴_{July 29, '94} delivered an infant which weighed 2300 grammes ($4\frac{1}{8}$ pounds), the mother's pelvis being rachitic and pseudo-osteomalacic. D. Davies ²_{May 12, '94} successfully performed the operation in a case of malign uterine tumor. Baecker ³¹⁷_{No. 24, '94} describes the case of a woman of 40 years, in the ninth month of her ninth pregnancy, with pulmonary œdema and eclampsia, who succumbed an hour and a half after entering the clinic. As the child appeared to be living, the Cæsarian operation was performed and an infant measuring forty-three centimetres in length and weighing 2510 grammes (5 pounds) was delivered. It was in a state of algid asphyxia, but was resuscitated. A. L. Russell ¹⁸⁶_{May, '94} relates two cases from the service of Barton Cooke Hirst, who elsewhere ¹¹²_{Feb., '94} reports a Porro operation for fibroid of the cervix, with recovery of the mother, the child being dead, and another for gigantic overgrowth of the fœtus, which weighed 14 pounds (6.4 kilogrammes) and presented by the face. Recovery followed. Hermann ⁶_{July 14, '94} reports two,—one for a fibroid tumor occupying the pelvic cavity and the other for cancer of the cervix obstructing the passage of the child. In the latter case the mother and child lived; in the former the mother died from peritonitis. In another paper ⁶_{Dec. 23, '93} the same author reports three cases. In the first the pelvis was flat and rachitic and delivery had been attempted at term by version. Death and decomposition of the fœtus had taken place, and septic symptoms appeared in the mother before operation; death followed thirty-six hours after Cæsarian section, probably from septic peritonitis. The second case was one of fibroid tumor, causing retention of urine and obstruction of labor. Hydramnios was also present. Cæsarian section was performed in the eighth month of pregnancy and the appendages removed. A living child was delivered

which died soon after, and the mother succumbed fifty hours later. The third case was one of rachitic pelvis, labor being induced eight days before term and Cæsarian section performed in the first stage, a macerated infant being extracted. The mother recovered.

A. B. Tucker ²_{Apr. 23, '94} performed Cæsarian section for extreme contraction of the vagina, the child dying and the mother recovering. S. C. Gordon ⁹⁹_{Aug. 16, '94} resorted to it in a case of uterine epithelioma, the mother dying fifty-six hours later from septic peritonitis. Fichère ⁴⁸_{Oct., '93} performed the operation in a case of generally contracted pelvis measuring 5.5 centimetres. A dead fœtus weighing 4000 grammes (8 pounds) was extracted, the mother recovering without accident. Salvetti ⁹⁹⁷_{Jan., '94} reports a very successful case in a woman four feet in height, the pelvis measuring between five and six centimetres. Kayser ³⁹³_{B. 27, H. 2, '94} operated on a II-para in whom the forceps had been used at the first labor, followed by cephalotripsy, a vesico-vaginal fistula resulting, with injury to the vagina and perineum. Examination during the second pregnancy showed a double promontory and stenosis of the vagina. Labor was induced, but the cervix did not dilate owing to old cicatrices. As the mother wished a living child at any price, Cæsarian section was resorted to, both lives being saved. In a second case in which there was stenosis of the soft parts, the mother died, and the child, which weighed 1800 grammes ($3\frac{1}{3}$ pounds), succumbed to icterus. Forster ³³_{July, '94} practiced the operation in the country, the mother recovering in eight days. The child lived and weighed 4 kilogrammes ($8\frac{3}{4}$ pounds). The pelvis measured five centimetres and the vulvar opening was but three centimetres wide. In a case operated on by Smith ⁸²_{Feb. 24, '94} the scrotum of the child was abnormally developed, owing to the position. Both mother and child recovered. P. A. Harris, ⁵⁹_{Feb. 3, '94} Barriera, ²³⁶_{Dec., '93} N. W. Colahan, ¹⁶_{Nov., '93} J. Cullingworth, ⁶_{Dec. 9, '93} Cocq, ²⁵⁶_{Sept. 30, '93} D. Hopper, ²⁸⁵_{Dec. 15, '93} T. Nicholson, ⁴³_{Nov., '93} and J. Ikeda ¹⁶²_{Mar., '94} all report successful cases; in the cases operated on by Furneaux ²_{Feb. 10, '94} Jordan, ¹⁸⁸_{Jan. 14, '94} Villar, ⁹⁹_{Dec. 21, '93} and Croston the mothers recovered, but the children died. In the case of the last-mentioned author there were twins united at the sternum and still-born.

Czyzewicz ¹⁶²_{p. 276, '94} gives the following indications for Säger's operation, or conservative Cæsarian section: 1. Slow progress of

labor, due to flaccidity and thinness of the uterine walls, to the size of the child, and to pelvic contraction. 2. Artificial reduction of the size of the head in previous labors owing to contracted pelvis. 3. Eclampsia with serious uræmic symptoms toward the end of pregnancy. 4. Pelvic deformity from osteomalacia, interfering with craniotomy. The consent of the patient and her friends is indispensable. The author would employ Porro's operation (a) in osteomalacia to avoid the necessity of castration later on; (b) in cases in which there is danger of atony of the uterus when relieved of its contents; (c) in cases where total ablation of the uterus is indicated on account of neoplasms or septic areas.

BASIOTRIPSY.

Maygrier¹⁹⁴_{June 14, '94} performed this operation upon a primipara of 44 years, rachitic and in labor, with premature rupture of the membranes, the generally-contracted pelvis measuring about eight centimetres. The fœtus had been dead a short time and presented by the vertex, the head not being engaged and the limbs and cord having prolapsed. Maitland,²_{Jan. 13, '94} in the case of a primipara, aged 26 years, in labor for twenty-eight hours and with the membranes ruptured, performed evisceration and amputation of the members. The mother recovered. Monner²⁰²_{Jan. 25, '94} performed the operation for premature ossification of the bones of the head. Ovi¹⁸⁸_{Feb. 18, '94} operated in a case of contracted pelvis measuring 8.5 centimetres, the child being dead and rupture of the uterus being imminent.

PUERPERAL DISEASES.

Nervous Affections.—Adenot²¹¹_{Oct. 22, '93} publishes a contribution on traumatic paralysis of the sacral plexus from compression during labor. This compression seems to be chiefly exerted on the sacrolumbar nerve,—as shown, not by paralysis exclusively in the domain of the external popliteal sciatic nerve, but also in that of the internal popliteal sciatic, with a predominance, it is true, of the former.

A. Moore⁴³_{Dec., '93} reports a case of aphasia consecutive to a twin labor. In spite of considerable hæmorrhage the patient had seemed to recover, when, on the eleventh day, the aphasia appeared. Two months later she was still unable to recall the names of those about her and speech returned but slowly. H.

Dagonnet ⁷³_{Apr. 7, '94} divides puerperal psychoses into the following classes: 1. Those which directly depend upon a febrile puerperal affection or infectious psychoses. 2. Idiopathic cases without fever or organic lesions, comprising the psychoses of pregnancy and lactation, and those due to debilitating causes, as abundant hæmorrhages, after labor. 3. Those due to intoxication after eclampsia, and, exceptionally, to uræmia without eclampsia. Acute psychoses, according to Westphal, are generally observed after puerperal pyæmia and ulcerative endocarditis. Toulouse ²³⁶_{Feb., '94} gives a favorable prognosis in the psychoses of lactation. As in puerperal mania, auto-infection plays a considerable rôle in these cases. Baijnath ²³⁹_{Oct. 1, '93} treated a case of acute puerperal mania with hyoscyamine and hydrobromine, complete recovery ensuing.

Nash ²⁶⁷_{Feb. 15, '94} reports a case of neuralgia of the tibia following labor, and Vergeli ¹⁸⁸_{Mar. 25, '94} a case of pseudorheumatism, with death from cardiac thrombosis. Oliver ⁶_{May 26, '94} relates a fatal case of epilepsy in a young puerperal patient with no antecedent history of the disease. Albumin had not been observed in the urine. Doria ⁹²¹_{Jan. 15, '94} discusses the bacteriological diagnosis of puerperal tetanus, and Maxwell, ⁵⁹_{Aug. 4, '94} in publishing a case, recommends the use of antispasmodics and antitoxins.

Exanthemata.—Gærtig ³¹⁷_{No. 30, '94} reports the case of a woman in whom an erythema, having no relation to scarlatina, followed each of three labors. Lipinski ³¹⁷_{No. 6, '94} describes a similar case, which, in his opinion, belongs to Simpson's type of erythema. Loviot ²⁴_{June 24, '94} describes a case of recurrent, generalized, desquamative, scarlatiniform erythema, of puerperal origin, in a patient who had had fever from want of proper antisepsis. Bodilly ²_{Mar. 17, '94} cites a case of puerperal erythema simulating scarlet fever. Fiessinger ⁵⁵_{Oct. 7, '93} publishes a case showing the difficulty of attributing puerperal scarlatina either to true scarlatina or to a scarlatinoid erythema. Urbain ¹⁶²_{p. 316, '94} describes two cases of puerperal septicæmia of erysipelatous origin, —one by direct contagion, the other by the intermediary of the midwife.

Puerperal Fever.—Prioleau ²³⁶_{Jan., '94} is of the opinion that certain rare cases of inevitable puerperal infection occur in spite of rigorous antisepsis, being met with where delivery takes place in an infected or mephitic atmosphere or coincident with the evolution of an infectious disease in a patient with previous genital or para-

genital disease. However, these conditions do not necessarily imply a fatal puerperal infection. The mechanism of such infection appears to be the entrance of air charged with the noxious principle into the genital area, or deposition at the site of the placental wound of germs brought through the blood of the parturient, these germs increasing under favorable conditions,—such as constant temperature, appropriate medium, and diminished phagocytosis from the infection already existing. The new puerperal infection in turn penetrates into the blood and aggravates the former disease. An old genital lesion may be awakened under the influence of labor, or an external genital affection may settle upon the wound caused by delivery.

Lowel Drage⁶_{Feb.24,'94} describes a venous form of septicæmia, due to softening of a venous thrombus or embolism. Playfair²_{Nov.25,'93} shows the enormous influence of mephitic emanations and local sanitary conditions in the production of puerperal septicæmia, while Hermann²_{Oct.14,'93} points out the relation existing between the affection and external meteorological conditions.

Cleland¹¹⁸⁴_{Nov.,'93} relates a case of ante-partum decomposition of the placenta, with maternal infection and recovery. Bowers²⁸⁹_{Aug.16,'94} cites a case of malarial origin in which quinine produced good effects. Dumont²⁸⁶_{p.493,'94} relates a case of puerperal pseudo-infection of intestinal origin due to the coli bacillus, and J. Haynes¹_{Dec.30,'93} a case of a similar nature.

Krönig³¹⁷_{p.167,'93} concludes that in gonorrhœal women the affection may invade the uterine cavity and in itself produce fever, which, though not dangerous to life, may be followed by ovarian complications. Frascani,⁹⁹⁷_{Nos.5,6,'94} in a bacteriological study, states that various pyogenic micro-organisms, either alone or associated, may determine lesions of the genital apparatus which may become the point of origin of puerperal fever. Researches made simultaneously on the blood, urine, milk, and lochia authorize him in considering the local pathological conditions, as well as the general disturbances, as dependent on these micro-organisms. In puerperal infection these germs are constantly eliminated in a virulent condition by the kidneys and breasts, although the organs themselves may present no very appreciable lesions. The author believes, therefore, in the necessity of adopting prophylactic measures not only as regards the lochia, but also as regards the urine

and milk and even the perspiration. In view of the passage of these pyogenic organisms in the milk after the cessation of serious general symptoms, it would seem advisable to interdict nursing, not only on account of the child (although Würzburg, Zuco, and others deny the infection of infants by milk containing pyogenic bacteria), but to avoid suppurative inflammations of the breast.

Gottschalk ⁶_{Nov. 11, '93} has successfully used, in the treatment of puerperal fever, a 1 to 100 trichloride-of-iodine solution, in hypodermatic injections of 1 to 2 cubic centimetres once or twice daily. A. Ivanoff ³¹⁷_{Dec. 30, '93} praises intra-uterine injections of a weak solution of common salt, its effects being more rapid than those of corrosive sublimate. Swiecicki ⁴¹_{No. 42, '94} declares himself a partisan of the abscess of fixation method in puerperal fever, and recommends the furrow of the deltoid or the epigastric region as favorable points for injection, causing less pain and provoking abscess more easily. A. R. Traham ¹²_{Jan., '94} has had good results from the use of peroxide of hydrogen.

Riberolles ³_{Jan. 17, '94} gives the results of an investigation of four cases of puerperal fever ending in death. He states that the disease has existed for about fifteen years throughout a region of high plateau in Auvergne. The form is miliary, the general condition being quite satisfactory during the first days of the puerperium. On the third, fourth, or fifth day a profuse sweating, especially of the head, is accompanied by profound prostration, and fever supervenes, the pulse being from 120 to 140 and the temperature from 38° to 38.5° C. (100.4° to 101.4° F.). The following day a miliary eruption appears, resembling ichthyosis when touched. This persists for three or four days, when bilious vomiting occurs, with absolute paralysis of intestines and bladder, the temperature rises to 41° and 41.5° C. (105.8° and 106.6° F.), and death takes place without any suspicion of danger on the part of the patient or the attendants. The disease is certainly due to direct or indirect contagion, though it is manifested only in sporadic cases, which seems to imply that there is another mode of propagation than through the midwives and obstetricians. In the region in question it must be recognized that the most elementary rules of cleanliness, to say nothing of hygiene, are unknown, and since the disease has appeared no prophylactic measures have been tried. The author calls attention to the

necessity of investigating the origin and mode of propagation of this infection in a region which, *a priori*, must be considered as an essentially healthy one.

Eclampsia.—Bar and Renon, ⁹²⁷_{Apr. 22, '94} from a bacteriological examination of three patients dead from eclampsia, conclude that this affection may be the termination of various pathological conditions succeeding a generalized infection or perhaps a non-infectious toxæmia. Rapin and Monnier ¹⁴_{Apr., '94} examined the blood of four women with eclampsia, and in three of the cases found a special bacillus, which they were able to isolate and cultivate. The microbe is swollen at each extremity and stains between these extremities by Gram's method. Inoculated into animals it causes symptoms similar to those of eclampsia.

R. Morris ¹⁴³_{Nov., '93} publishes four cases of eclampsia to show that the relation between that disease and albuminuria are not so close as the theory of Lover and Brown would imply. S. Cunningham ¹⁴³_{Nov., '93} observed eight cases, all in primipara with vertex presentation of male children. Seven of the cases recovered. T. Cunningham ⁹⁹_{Oct. 20, '93} observed eclampsia three times out of two hundred labors,—twice at the beginning of labor and once after, all the patients being albuminuric primiparæ. Vinay ³⁶⁰_{Dec., '93} names, as predisposing causes of the affection, age, first childbirth, twin births, prolonged labor, vertex presentations, contraction of the pelvis, hysteria, the season of year, epidemic factors, and contagion; and, as determining causes, lesions of the kidney and liver, compression of the ureters, and microbial agents. In regard to the pathogeny he states that the etiological problem does not lie in the more or less normal condition of the urine, in the presence or absence of albuminuria, nor even in the integrity or alteration of the kidney, but in internal intoxication and the sufficiency or insufficiency of the emunctories. Tibone ⁹⁹⁷_{Apr., '94} insists upon the rôle of the urinary apparatus, especially symptoms of compression. Cerdès ⁶⁹_{p. 603, '93} considers the eclamptic bacillus as the only cause, since it is not found in other diseases and since eclampsia does not occur without it. The infection arises in the uterus, probably from an endometritis existing before conception. The convulsions due to other causes at the moment of birth must be carefully distinguished from eclampsia, from which they sometimes differ altogether, as proved by post-mortem examination. The grave

changes found in the organs in eclampsia are probably the direct or indirect result of the toxins of the eclamptic bacillus.

Ralph Davis⁸¹_{Apr., '94} has had good results, in the treatment of eclampsia, from the use of veratrum viride in large doses of the tincture. Rogers¹⁹_{Feb. 9, '94} also recommends this drug. Tarnier²¹¹_{Mar. 25, '94} advises the following measures: Venesection of 300 to 400 grammes ($9\frac{1}{2}$ to $12\frac{3}{4}$ fluidounces), absolute milk diet, drastic purgatives, and, if these do not act, injections containing 1 drop of croton-oil several days in succession; chloroform in inhalations in preference to chloral, which is too rapidly eliminated by the purgatives. Venesection will aid in forming a prognosis. With the serum of the blood injections can be made into rabbits, and, if the animals be killed by 8, 6, 4, and even 3 grammes (2, $1\frac{1}{2}$, 1, and $\frac{3}{4}$ fluidrachms) of serum per kilogramme ($2\frac{1}{5}$ pounds) of body-weight, we have an experimental proof that the blood is more or less toxic and the prognosis more or less grave. McLeod²⁶⁷_{May 15, '94} successfully treated a case by venesection alone. C. F. Paine²⁰¹³_{May, '93} cured two cases by opiates when other measures had failed. Bernheim³¹_{Nov. 18, '93} advocates subcutaneous injections of sterilized salt water. Gelli¹⁵_{Aug., '94} treated six cases by chloroform, followed by large doses of chloral hydrates, only one case proving fatal.

Miscellaneous Affections.—Otto Engstrom⁹⁹⁶_{Aug. 10, '94} discusses puerperal hyperinvolution of the uterus following a normal or disturbed puerperium. He noted in most cases a visible diminution in the cervix, contrary to the opinion of most authors that the atrophy is limited to the body of the uterus, the neck remaining intact. According to him the excentric and concentric forms are but different stages of development, the concentric being the later stage.

Knaggs⁶_{Apr. 7, '94} reports a case of pulsating exophthalmos complicated with glaucoma, following labor, cured by ligature of the common carotid artery. Broberg⁹_{June 23, '94} observed a case of pernicious anæmia, and Schreiber³¹⁷_{No. 21, '94} a case of acute atrophy of the liver. Chalke²³⁹_{Apr. 1, '94} reports a case of fæcal impaction causing sciatica, and Lewers¹⁰⁷⁷_{Feb. 14, '94} a case of apparent occlusion of the vagina and urethra following labor. Raffray⁷_{Nov. 20, '93} relates a case of post-puerperal phlegmon of the broad ligament opening above the crural arch. A secondary stercoral fistula led to a fatal result.

ANTISEPSIS.

Israelsohn ²¹_{Jan. 13, '94} has used lysol for a year and a half with very satisfactory results, finding its antiseptic power greater and its toxicity less than that of other antiseptics. He uses a solution of 1 to 100 for the skin and 2 to 100 for instruments. It causes a slight burning sensation.

Godson ⁵_{Nov. 18, '93} gives statistics favoring the use of sublimate. He employs a 1 to 2000 solution, making an injection, whenever practicable, during and after labor. During a period of eight years he has used it in 3203 cases without observing any untoward symptoms. The mortality was 11 per cent., or 1 in 291. During the past two years, of 1138 cases, not a single one was fatal, while during the eight years preceding, during which sublimate was not used, of 2445 patients there were 59 deaths, or 1 in 41. J. Price ⁹⁹_{Jan. 2, '94} also presents interesting statistics. From 1862 to 1872, when parturients received no care, of 1009 patients the mortality from septicæmia was 20 per cent., or 1 in 50. There were two epidemics in 1867 and 1872. In that year antisepsis was inaugurated, and until 1882 there were 1026 cases, with 9 deaths, the mortality thus falling to 1 in 114, while there was no epidemic. From October, 1882, to October, 1892, of 1224 cases, but 2 died, or a mortality of 1 in 612, these occurring in 1884. Since then there had been 897 cases without a single death. From 1886 bichloride of mercury alone had been used. The author makes a vaginal injection at the beginning of labor and another at the end, intra-uterine injections being reserved for complicated cases. If the lochia be fetid, a sublimate vaginal injection is given; if chills and elevation of temperature, an intra-uterine injection. If the symptoms continue or become aggravated, the curette is resorted to. Mays ⁷⁷_{Dec. '93} uses a 1 to 5000 solution of sublimate. R. Boxall ¹⁰⁷⁷_{Dec. 6, '93} finds that of all antiseptic agents corrosive sublimate is the best, Budin's formula presenting great advantages. Untoward symptoms may easily be avoided by proper precautions. He recommends a 1 to 1000 solution for the hands and 1 to 200 for the vagina. A. Murray ¹_{Feb. 24, '94} uses the same strength. H. C. Bennett ¹⁸⁶_{Jan., '94} insists on the necessity of vaginal injections.

DISEASES OF THE NEWBORN; TERATOLOGY.

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DISEASES OF THE NEWBORN.

THE literature of this subject during the past year has been exceedingly rich. Olshausen, in a communication to the Hufeland Society, January 18, 1894, has made some interesting comments on the first cry of a newborn infant, which cannot be solely due to want of oxygen in the system. When the head is born the color quickly changes from red to blue, on account of venous stasis. After the trunk is born inspiration occurs, quickly followed by expiration and then by the cry. No inspiration takes place until the thorax is delivered, provided the latter occurs not more than two or three minutes after the delivery of the head. The course of events is different when the first inspiration is caused by want of oxygen or when a child is delivered by Cæsarean section. With healthy children a minute may elapse before breathing begins. The first inspiration is shallow, a deeper one follows, and after several inspirations there is expiration and a cry. The release of the compressed thorax accelerates the first deep inspiration and first expiration with the cry.

Feis⁹⁵_{B. 43, H. 3, '94} made a series of observations of the temperature in twenty-five children during the first week of life. A maximal thermometer was used in the rectum, being retained fifteen minutes in each case. The temperature of mother and child was taken simultaneously. The child's temperature usually exceeded the mother's by 0.6° C. (1.08° F.). If the child were immature the temperature was lower than in the mature. Immediately after birth there was a fall of 0.86° to 1.7° C. (1.62° to 2.11° F.); then came a rise, and in thirty-six hours the normal was reached.

Alimentary Tract.—Leyden³¹⁷_{No. 8, '94} reports a case of gonorrhœa affecting the upper lip of a newborn infant, in connection with a similar affection of the eyes, and this notwithstanding careful

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prophylactic applications to both mother and child. The infection was believed to have been carried by the hand of the child. The condition proved quite amenable to treatment, but the complication was regarded as a very rare one.

Schültze³¹⁷_{No.9,'94} reports a case of melæna resulting fatally a few days after birth. The stomach was distended with gas and contained fluid blood, as did the lower small intestine and colon. There were also effusions of blood under the tentorium cerebelli infiltrating the dura. Preuschen³¹⁷_{No.9,'94} has studied the relations of lesions of the central organs occurring during birth to melæna. He repeatedly found erosions of the gastric mucous membrane associated with infarctions of the lungs, and extravasations under the tentorium on the cerebellum, crura cerebelli, ala cinerea, corpora quadrigemina, and once on the surface of the cerebral hemispheres. These discoveries suggested some experiments on rabbits. A solution of chromic acid was injected into portions of the brain to be examined, and lesions accompanied by melæna were obtained. The gastric extravasations were usually in the cardiac region, fundus, and greater curvature, though in some cases they followed the vessels. In other experiments pieces of sponge and laminaria were placed in various parts of the brain and paraffin was injected between the surface of the brain and the calvarium, the same results as in the previous experiments appearing in the stomach and lungs. In the literature of melæna 92 cases were found, with 51 deaths and 46 autopsies; but in only 5 were careful and complete examinations made of the brain.

Constipation in the newborn²⁴_{Apr.22,'94} may sometimes be relieved by regularity in nursing. If the child is bottle-fed the milk should be rich in cream. An enema of warm water may be given night and morning, or a small suppository of cocoa-butter used, or a few drops of glycerin and water injected. Massage of the abdomen with inunction of camphorated oil may also be used. A warm bath should be given daily, and the child should be kept in the open air as much as possible.

Ullmann⁶⁹_{Jan.11,'94} narrates a case in which large concretions of mucus were passed by an infant a few hours after birth, also strings of mucus. Longuet and Rothmann have reported somewhat similar cases. Ewing⁴_{Aug.27,'94} saw a fatal case in which a large plug of mucus filled the lower portion of the ileum and occluded the

ileo-cæcal valve. No specific cause for this abnormality was alleged by any of these writers. Stein⁴_{Aug. 27, '94} observed the rare condition of primary sarcoma in the small intestine. The intestine was entirely occluded, and death occurred on the fourth day.

Anatomical Defects.—Cranial deformity was seen by Wheaton²_{Jan. 20, '94} in two nearly similar cases, which were thought to be of syphilitic origin. There was antero-posterior shortening of the cranium, due to arrest of development of the base, and the fossæ were diminished in the antero-posterior direction, the skulls being nearly globular in shape. In the frontal and parietal bones there were many perforations. The occipital convolutions were imperfectly developed. In each of the cases there was also webbing of the digits of all the extremities and fibrous thickening of the spleen.

Loviot⁴⁸_{July, '94} saw a case of cephalhæmatoma which appeared the second day after birth. Traumatic pseudomeningocele has been investigated by Alexandroff and Krasnobajeff.³¹_{May 6, '94} The condition, which is a rare one, was first described by Billroth, and is due to defect in the cranial bones and meninges and communication of the tumor with the lateral ventricle of one side or the other.

Baumgarten¹³⁶_{Jan. 1, '94} reports a case of congenital want of union of the nostrils, the nose having three cavities. This is due, of course, to defective development, the nostrils being developed from separate centres and, in this case, failing to unite, as in double harelip.

A peculiar case is reported by Schmidt¹³_{July, '94} in a six months' fœtus. The pleural cavities, lungs, pulmonary arteries and veins were absent. The heart was on the right side, the peritoneum asymmetrical, and the trachea communicated with the œsophagus. There was some obstruction during the developmental stage of the respiratory apparatus. In a case seen by Dittel³¹⁷_{May 19, '94} there was defective development of the peritoneum in a still-born child. The small intestine, stomach, and a portion of the large intestine were in the left pleural cavity. There was also secondary dextrocardia.

Extrophy of more or less of the viscera has been reported by several observers. In Stanton's case⁴³_{May, '94} the abdominal cavity was open, and stomach, bladder, and intestines external. The abdominal cavity was so contracted that reposition was impossible. The child lived but a few hours, and the condition was associated

with a maternal impression. Piéchaud ¹⁸⁸_{Apr. 22, '94} saw a similar case, in which reduction was also impossible and death quickly resulted. In Laeouche's case ¹⁸⁸_{Apr. 22, '94} there was an external and irreducible pouch containing the liver, spleen, stomach, and a portion of the intestine. The child lived only twenty minutes. In Woerz's case ³¹⁷_{Jan. 6, '94} there were spina bifida, divided symphysis, ectopia of the bladder, and amniotic navel. This child lived until the twenty-fifth day. Congenital occlusion of the small intestine from defective development was observed by Murray ⁶_{May 26, '94} in an infant which succumbed on the third day. In Ballantyne's case ³⁶_{May, '94} there were exomphalos and sacral meningocele; also clubbed feet, imperforate anus, and imperfect development of the external genitals. It lived only a few minutes. The mother was a healthy woman, but the father was alcoholic and crippled from sciatica.

In Ponty's case ¹⁸⁸_{June 17, '94} there were polydactylia of the hands and feet, umbilical hernia, and apparent anophthalmia. Autopsy showed that both eyes were present, though rudimentary. In a case seen by Alexandroff ¹¹⁰_{Sept. 11, '94} there was obliteration of the lumen of the large intestine, which may have been caused by an intra-uterine peritonitis. In Byron's case ¹_{Feb. 24, '94} there was a congenital recto-vaginal fistula, the vagina serving as a cloaca for fæces. Such cases are usually susceptible of relief by operation. Marckwald ³¹⁹_{Sept. 1, '94} operated upon a newborn child for atresia of the anus, but death took place on the third day. The autopsy showed atresia of the rectum, the œsophagus, and the duodenum. The cause was obscure, but was thought to be some infectious process communicated by the mother. Generisch's case, ⁵¹_{Aug., '94} fatal in two and a half months, was one of congenital dilatation and hypertrophy of the colon due to some fault of development. The symptoms observed were obstinate constipation accompanied with tympanites, dilatation of the colon, followed by diarrhœa and rapid emaciation.

It will be observed that these cases of faulty development in the alimentary tract were uniformly fatal. Surgical procedures have thus far proved futile against such serious natural defects. Even when a correct diagnosis was made, all treatment proved unavailing. Whether the resources of medicine or surgery will ever be able to cope with such conditions is a question which the future must decide.

Müller³¹⁷_{Mar. 17, '04} observed a case of cyst of the hymen sufficiently large to cause inability to urinate. The child recovered after the cyst had been punctured. He also saw a fatal case of hæmorrhage from the eyelids, death occurring on the fourth day. All measures to check the hæmorrhage proved unavailing. The only explanation possible was that hæmophilia was an insuperable obstacle.

J. Berry⁷⁴_{Mar. '04} has had a case in which a maternal impression seemed responsible for a tail five inches long upon a male child. The mother had carried several young pigs about by the tail during her pregnancy, and was evidently influenced to no inconsiderable degree by that experience.

Butchart⁹⁶_{May, '04} had a case in which there was a spina bifida in the lumbar region terminating in a mass suggesting a tail four centimetres long and seven in circumference. Both feet were clubbed and the child was very small. Both parents were alcoholic.

McCosh⁹⁶_{May, '04} reports a case in which it was believed there had been an intra-uterine amputation of the arms. The right upper extremity terminated at the elbow, the left at the junction of the lower and middle third of the arm. The left femur was bent near its middle, and had ossified in this faulty position. The amputation was supposed to have been made by amniotic bands or by the funis.

Griffiths²_{Dec. 30, '98} examined with care an acephalous fœtus with spina bifida and with symmetrical talipes dorsalis of both feet. The feet were carefully dissected and the process of development, which was quite suggestive of talipes calcaneus, minutely studied.

Bacteriology.—Kamen⁵⁰_{Dec. 23, '93} has described five fatal cases of Winkel's disease, in which bacteriological examination seemed to indicate that the etiological factor was the bacterium coli commune. The question is somewhat involved in doubt, and it was suggested that the bacterium enteritidis Gärtner may have been the cause.

Gärtner⁹_{Feb. 3, '04} reports two cases of mælæna neonatorum in which examination of the intestinal contents of the blood from the heart and spleen, and of the tissues of the spleen, liver, and intestines showed the presence of a short bacillus with active movement and discernible flagella, multiplying by fission and giving rise to the production of gas. The organism was cultivable upon the

ordinary media and stained readily with aniline colors. Inoculation of young dogs resulted in a condition similar to melæna, as seen in newborn infants, and organisms were found in the blood and organs of such animals of similar character with those in the human subjects. It was concluded that the organism found was the causative agent and that the umbilicus was the point of entry.

Hénle ⁴_{Jan. 8, '94} discusses the question of pseudotuberculosis in newborn twins based upon post-mortem examinations of subjects born of a phthisical mother. In the liver, kidneys, and pia mater were found submiliary nodules which resembled true tubercle; in the stomach and intestine enlarged masses were found. Microscopical examination showed that the bodies found were not true tubercles, but small necroses, from which pure cultures of bacilli of a definite character were obtainable. They were thicker than tubercle bacilli, of unequal length, and round at the ends. They were readily stained with methyl-blue and other aniline dyes, and by the Weigert and Gram methods. No pus-cocci were anywhere found. The navel and the surrounding veins were believed to be the points of entry, and the stomach and intestinal enlargements were regarded as secondary developments.

Legry and Dubrisay ⁴⁸_{July, '94} report a case in which the mother suffered from the beginning of pregnancy with intense vaginitis, caused by streptococci. Labor lasted two and a half hours. The child died in eleven hours, and the autopsy showed pleurisy from streptococci with foci of pulmonary hepatization, which also contained streptococci. The conclusion was that the amniotic fluid was infected by the germs in the mother's vagina, the infection being propagated to the respiratory passages.

Barlow's Disease.—This disease is of very recent discovery, and is allied to scorbutus. Conitzer, ¹³_{July, '94} who reports two cases, calls it the Möller-Barlow disease, or osteopathia hæmorrhagica infantum. It usually occurs during the first dentition, and its victims are fretful and pale. Prominent symptoms are sweating of the head, swelling and bluish discoloration of the gums, swelling and sensitiveness of the bones, cachectic appearance, and rachitic changes in the bones; the joints, however, being unaffected. There is, also, bleeding from the gums when the teeth appear, with subperiosteal hæmorrhage, bloody stools, and bloody

urine. The prognosis is usually good. A case of this disease has also been observed by Starck. ³⁶⁶
Aug. 6, '94

Bones.—Railton ²
June 10, '94 reports a case of congenital rachitis, with a photograph of the child, which is herewith reproduced. He thinks that the post-natal and ante-natal forms of the disease are identical, and is favorably impressed with the opinion of Trousseau, that heredity has much to do with the development of the disease. The mother and brother of the patient were also rachitic.

Jennings ¹
Mar. 10, '94 gives the following conclusions concerning the treatment of depressions in the skull of the newborn: 1. Pneumatic traction may be used as a means of treatment, and if this is unsuccessful trephining may be performed. 2. Trephining, *per se*, is not a dangerous operation. 3. The removed button of bone can be replaced with good prospect of its union, on account of the vascularity of the bones at this period of life. 4. Frontal depressions rarely correct themselves. 5. Immediate action is desirable if the symptoms indicate operation. 6. If the depression is exaggerated at the end of the second week of life an operation should be performed to prevent subsequent brain trouble and overcome the deformity.



CONGENITAL RICKETS. (RAILTON.)
British Medical Journal.

Courant ⁵
Apr., '94 reports a singular case of orbital tumor in a newborn infant. There was protrusion of the bulb of the left eye two centimetres beyond the root of the nose, which was separated by a shallow groove from a tumor which completely filled the orbit and projected beyond the lids. The tumor was readily removed, and a band extending backward into the deep portion of the cavity ligated and cut. Recovery was complete. The tumor was composed of connective tissue, muscle, mucous and sebaceous glands,

hair-roots, cartilage, and bone. Its embryonic origin was an anomalous formation of a secondary ocular sac.

Breasts.—Spitz¹¹²_{Sept., '94} calls attention to the frequency of an accumulation resembling milk in the mammary gland of both male and female infants; also to the frequent maltreatment of the same by mothers and nurses in their anxiety to give relief. The rubbing and pressure which are exerted not infrequently result in abscess with more or less extensive destruction of the structure of the mamma. In females such an injury may prove a serious one. Coesfeld⁶⁹_{Aug. 16, '94} states that he has seen and opened many abscesses caused by such rough treatment. His recommendation is to apply belladonna plaster to the breasts as soon as the swelling in them appears, and he has found such treatment eminently satisfactory.

Eyes.—Of 313 maternity cases in which gonorrhœa affecting the eyes was especially considered by Steinbüchel,¹⁹_{Apr. 21, '94} the disease appeared in the eyes in only 13. It was ascertained to be present in 70 of the mothers. The small percentage of infections was believed to be due to the Crédé method of treatment. As an effective prophylactic measure against ophthalmia in the newborn, Mous-sous²⁵⁶_{July 29, '94} uses crude oil of petroleum, instilling a few drops at the internal angle of the eye. Valude's method of prophylaxis²⁵⁶_{July 29, '94} consists in gently wiping from the lids, with absorbent cotton moistened with any suitable antiseptic, all substance which may have adhered to them during birth, and then dusting them with a small quantity of iodoform. Other writers upon this subject have found the solution of nitrate of silver, as recommended by Crédé, completely satisfactory. In view of these facts, it would be well if obstetricians would stop experimenting for awhile and adopt a method which has proved almost ideal in the results which it has yielded.

Hæmorrhage.—Herrgott²_{May 12, '94} discusses the question of gastrointestinal hæmorrhages in the newborn, attributing them to malformation of the left auricle and ventricle. He has seen but two cases of primary hæmorrhage of this character in 3000 children born in his obstetric clinic. In the second of these cases, in which an autopsy was obtained, the right chambers of the heart were dilated, but the walls and cavities of the left auricle and ventricle were imperfectly developed. This caused pulmonary and systemic

congestion and hæmorrhage from the engorged veins of the intestinal mucous membrane, the left auricle being too small to receive all the blood issuing from the pulmonary veins. A case of gastrointestinal hæmorrhage is reported by Konkle,⁹_{Apr.21,'94} occurring on the second day of life. There was first hæmatemesis, and subsequently several copious evacuations of blood from the bowels. The cause seemed obscure, as there was no inherent diathesis, no accident during birth, nor want of care and attention subsequently. Various theories which have been propounded as efficient causes of such a condition are discussed and rejected by the author, who concludes that the probable cause consists in the relation which the closure of the ductus arteriosus bears to the closure of the foramen ovale. The same subject is discussed by Barral,²¹²_{Nov.10,'93} in connection with a case which came under his observation, and which he treated successfully with a mixture of ergotine and rhatany. He offers the following suggestions for similar cases: 1. See if the hæmorrhage is not due to purgative medicines which may have been given. 2. Act with suitable determination, even though the condition may seem desperate. 3. Use abdominal pressure, together with such internal astringents as are known to have a favorable effect in similar conditions.

Loranchet⁵_{Jan.,'94} had a case in which vomiting of blood began twelve hours after birth, and was frequently repeated during the next twelve hours. Friction with camphor and whisky was used, heat was applied, and the infant was wrapped in cotton-wool. Internally seltzer and sugar-water were given, then a few teaspoonfuls of coffee, then a teaspoonful of pulverized ice covered with milk every hour. Minute doses of perchloride of iron were also given, recovery resulting. The hæmorrhage was believed to have been caused by exposure to cold, which acted as a depressant of the nervous system, the general circulation being disturbed, the peripheral circulation slowed, and the vasomotor system unbalanced. The statistics of Barthéz and Sanné are quoted, according to which 11 out of 23 cases resulted fatally.

Conroy¹_{Apr.21,'94} reports a fatal case of hæmorrhage in a syphilitic infant, the syphilis having been inherited through the father. Syphilitic pustules appeared fifty-five hours after birth. The next day blood and pus were discharged from the right ear, and blood from the nose, vagina, and rectum. There were also subcon-

junctional ecchymoses and bloody urine, hæmatemesis and bleeding from mucous surfaces and into the pustules. The left side of the head was œdematous. The hæmorrhages continued during the next two days, when death resulted.

Heart.—Strassmann⁵_{June, '94} objects to the usual explanation of the mechanism of obliteration of the ductus arteriosus. Thrombosis of the canal is rarely found, and, when present, it is pathological; besides, it has never been demonstrated that the canal can contract or bend at the time of the first inspiration so as to obliterate the lumen. His theory is as follows: When respiration is established, blood-pressure diminishes in the right heart and pulmonary artery and is increased in the left heart and aorta. As a result the aortic orifice of the ductus arteriosus receives less blood and is submitted to a mechanical pressure which determines its obliteration. This does not occur when respiration is not sufficiently established and the lung remains uninflated. The same result obtains when, after premature respiration, the arterial canal is too distended to permit of its obliteration, asphyxia being induced. Obliteration does not occur when the relations of blood-pressure in the great vessels are transposed, as in malformation of the heart or stenosis of the pulmonary artery or aorta. These considerations seem to prove that the aortic orifice of the ductus arteriosus closes mechanically, which enables us to understand its reopening under certain conditions. Padgett⁸⁶_{Aug., '94} diagnosed heart-lesion in an infant during the last days of foetal life, and confirmed his diagnosis after the child was born. The murmur was a mitral regurgitant one, and there was no other lesion of the heart. This condition is a very rare one in the newborn.

Incubation.—Bouchacourt²¹¹_{July 16, '94} describes an incubator, or *couveruse*, which, he asserts, has advantages over others heretofore in use. It enables one to carry out antiseptic measures, and the source of heat is a lamp or gas-jet exterior to the apparatus. A thermometer on the outside indicates the temperature within, and ingenious devices prevent at all times an unduly high temperature. Guéniot²⁴_{Jan. 14, '94} affirms that he advocated the principle of treatment of immature infants by the incubator in 1872. He recommended a crib, properly inclosed and heated by bottles of hot water. He also recommended a system of passive exercise of the muscles, at about the same time, to assist in keeping the body-temperature at

a suitable elevation. His ideas were successfully carried out in numerous cases. In 1880 Tarnier devised his apparatus,—the *couveuse*,—stimulated by the experience of the poultry-fanciers with the incubator. Guéniot thinks there are disadvantages and inconveniences connected with the *couveuse* which were wanting in the simpler method devised by him, and concludes as follows: 1. Incubation by the old method with the crib is best adapted to the physiological needs of feeble newborn infants. Inunction of suitable substances, friction, and massage should always form a portion of the treatment. 2. Treatment with the *couveuse* is simpler and more easily applied than the treatment above mentioned, and is to be preferred for hospitals and the homes of the poor. 3. The *couveuse* is indicated in all cases if the infant is extremely feeble, weighing not more than 1100 to 1400 grammes (2 to 3 pounds).

Kidneys.—Frees³⁹³_{B.26, H.2, '94} reports a case of acute nephritis continuing from the third to the twenty-fourth day of life, with œdema, icterus, albumin in the urine, and tube-casts. Recovery resulted. The urine of the mother did not contain albumin. The cause of the nephritis was referred to a cephalhæmatoma. The author recommends that more attention be paid to the examination of the urine in the newborn than has been customary with most physicians. Primary sarcoma of the suprarenal body is reported by Cohn.²_{May 19, '94} A rounded mass, distinct from the enlarged liver, was observed on the right side of the abdomen, the spleen being also enlarged. There was also a swelling over the right temporal region, and the right eye protruded. There were five tumors as large as cherries behind the right ear. After death a tumor was found in the right suprarenal body, and metastases in the skull, ribs, kidneys, ovaries, and liver. Virchow made the examination, and concluded that the condition was medullary sarcoma. The case was believed to have been a very rare one.

Liver.—Quisling⁶_{Jan.27, '94} adds another contribution to those already published by him on icterus neonatorum. He observes that dyspepsia, nausea, vomiting, eructations, and flatulence, with sour and green stools, are constant symptoms and occur either simultaneously or soon after the appearance of the jaundice. In many cases fever is present, especially in the evening. The period of ligation of the cord was not believed to have had any particular significance. He does not think that the jaundice is due to dis-

turbance of the circulation from arrest of the placental circulation, and agrees, with Stadelmann, that the hæmatogen theory is untenable. He believes that the cause consists in a gastro-intestinal catarrh caused by the irritation produced by the first food, which is often of an unsuitable character. The catarrh extends to the common bile-duct, which becomes obstructed. Male infants are more frequently affected than females.

Schmidt ¹³_{Apr., '04} investigated the relation between icterus and the time of ligation of the funis in 149 children. In 50 cases the cord was tied immediately after birth; in the others, not until the placenta was delivered,—that is, in ten to thirty minutes post-partum. Of the 149 children, 80 were icteric; of 64 mature boys, icterus was present in 33; of 50 girls, in 20; of 22 premature boys, in 17; of 13 girls, in 10. He confirms the statement that feeble and delicate infants were more likely to be affected than those who were robust (boys more frequently than girls), notwithstanding the fact that boys were usually larger and heavier than girls. Icterus appeared most frequently from the second to the fourth day. He disagrees with the views of Violet, Epstein, Porak, and others, that icterus proceeds from destruction of the red corpuscles in cases in which there is delayed ligation of the cord. Of 50 cases in which the cord was tied immediately after birth, there was icterus in 36; of 71 in which the ligation was made more than ten minutes after birth, icterus was present in 30. The time of ligation had no particular bearing in those cases in which icterus arose from the sixth to the fourteenth day. Bauzon ¹⁰_{Apr. 11, '04} offers the following aphorisms on icterus: It is a benign disease, occurring in all countries. Ancient writers attached little importance to it. It is characterized mainly by an abnormal yellow discoloration of the skin. It usually develops from the periphery to the centre. The conjunctival discoloration is not so constant a symptom as in adults. The color of the buccal mucous membrane is a measure of the intensity of the disease. Its duration is proportional to its intensity. According to Porak, it is present in 80 per cent. of all infants; but the author thinks that 57 per cent. would be more accurate. It is usually attended by no functional disorder. It is benign because the bio-chemical functions of the liver are always preserved. The theories of its pathogeny are numerous and diverse. It is characterized essentially by an im-

pregnation of the integument with coloring-matter which results from the disorganization of a great number of blood-corpuscles. Late ligation of the cord is one of the best means for preventing its occurrence, Porak's opinion to the contrary notwithstanding. The most rational treatment certainly consists in simple hygienic measures.

Lungs.—The question of resuscitation of the newborn infant when asphyxiated at birth is one of the greatest importance, and has called forth the ingenuity of many thoughtful observers. The subject has been very interestingly discussed by Morison,⁶ Sept. 15, '94, who calls attention to Baines's classification of such cases, which includes three groups or varieties. The first is the "livid" variety, due to interrupted hæmotosis or arrest of placental respiration before the establishment of pulmonary respiration, and marked by cyanosis of the upper portion of the body and especially the face. The second variety is paralytic asphyxia, in which respiration is prevented by incapacity of the nerve-centres. The third variety includes atelectasis, due to imperfect development. Schultze's theory of asphyxia is based upon the presence or absence of muscular tonus, it being present in the livid variety and absent in the pallid. The former he considers a less serious condition than the latter. Morison believes that, except in cyanosis due to cardiac malformation, a child rarely dies in the livid stage of asphyxia; and he would divide cases of asphyxia into (1) those in which the foetal channels are narrowed and there is an obstructive plethora of the nervous system, with cyanosis, and (2) those in which the resistance of the foetus has been overcome and the relaxed foetal channels permit the languid blood-stream to find its way without such impediment as to engorge the surface.

The prognosis is, of course, better in the early than in the late stages of asphyxia, but one is reminded that, should pulmonary complications arise, or should there be extravasations of blood in the lungs or in the cranial cavity, permanent recovery may not take place even though aërial respiration has been established. He thinks it is not so much the degree of pressure-injuries during birth which affects recovery as it is their duration.

The preventive treatment of asphyxia consists in such measures as will increase the vitality and viability of the foetus while *in utero*, and in averting it when threatened during labor. After

birth it should be noted whether or not the cord still pulsates. If the child is cyanotic and pulsation of the cord exist, the latter should be cut as soon as possible. If the child is anæmic, ligation of the cord should be deferred as long as possible, especially until it is ascertained whether the placenta is or is not attached to the uterus. When the cord has been ligated, oxygenation of the blood by the placental circulation is, of course, no longer possible. The various methods of resuscitation, from Marshall Hall's down to the most recent contribution to the subject by Laborde, are then considered.

Oehlschläger⁵_{Apr., '94} believes that failure to relieve asphyxia is due to obstruction of the glottis by the backward pressure of the tongue, and he advises that the tongue be well drawn forward. Air can then be readily forced into the infant's lungs either by direct application of the accoucheur's lips to the lips of the child or by passing a soft catheter into the child's trachea. This will usually be sufficient for blue or cyanotic infants; for the pale and collapsed ones, pressure over the cardiac region, rapidly and rhythmically, to imitate the normal heart-beat, must also be used. The chest-walls being soft and elastic, direct heart-manipulation may thus be practiced.

The method of Laborde¹⁹_{June 30, '94} for resuscitation of the asphyxiated, which has now been in successful use many months, has the following technique: The anterior third of the tongue is to be seized either with a towel or with the bare thumb and forefinger and traction exercised fifteen or twenty times a minute. This is to be repeated at measured intervals and followed by relaxation of the tongue, thus imitating the respiratory movements. During apparent death the tongue will yield more readily to traction than at other times, and resistance will be perceived as life returns and respiration is established. Soon there will be swallowing movements and crowing inspiration. It may be necessary to continue the traction, without cessation, for an hour or even longer. The object is not to cause air to enter the lungs so much as to induce spontaneous respiration by stimulation of the terminations of the superior laryngeal and glosso-pharyngeal nerves, which awaken the bulbar respiratory centre, and thence lead to contractions of the diaphragm and thoracic muscles.

Laborde²²_{Jan. 8, '94} recently reported, at the Académie de Médecine,

five new cases of resuscitation by his method. He was asked if the method would be successful in cases of apparent death due to arrest of the heart's action. In reply he stated that it succeeded in every case of asphyxia following primary or secondary arrest of the respiration. It tended to awaken the excitability of the bulb and made it superior to flagellation, insufflation, artificial respiration, etc. Lancereaux had been successful in convulsions of infants with asphyxia by injecting morphia hypodermatically. In one case he injected $\frac{1}{5}$ grain (0.013 gramme), calm sleep and quiet respiration resulting. Pinard had failed three times with the method of Laborde. The latter was surprised at such failures, and stated that sixty-four cases of successful use of the method had thus far been recorded. Bernheim⁹⁹_{Aug-2, '94} reports a number of cases successfully treated by Laborde's method. Prochownik⁵_{Aug., '94} proposes a substitute for Schultze's method of treating asphyxia. It consists in suspending the child by the feet, the head being lightly supported. The ankles are held in the fingers of the left hand, while with the right hand the chest is grasped, the thumb in front, and six or eight compressions are made at regular intervals. The nose and mouth are freed from mucus, allowing air to enter with the inspiratory effort. It may be necessary to douche the infant as an adjuvant to the respiratory efforts. Prager²_{May 19, '94} concludes that Schultze's method is the most to be commended of any. It insures thorough ventilation of the lungs, restores the sinking circulation, and rids the air-passages of mucus. The lungs can be filled with air by this method, even when other conditions prevent one from saving the child. One case is mentioned in which the child was swung (the method consists in swinging the infant) 120 times.

Schultze⁵_{July, '94} reports a case in which an asphyxiated child suddenly died after having been resuscitated by swinging. An autopsy revealed fracture of the inner third of the right clavicle. The broken bone had entered the first intercostal space and perforated the pleura and lung. In such cases Schultze states that swinging can be practiced safely if care is taken to prevent the broken bones from injuring the lung. During the inspiration swing the child should rest with its whole weight on the index fingers, which are in the axillæ. In the expiratory position the child should rest on the thumbs, held in front, and the four

fingers, which are loosely placed in the axillæ and on the back. At no time should the clavicles be pushed backward.

A review of the methods of treating asphyxia neonatorum is given by Reynolds, ⁹⁹_{Aug. 2, '94} who calls attention to Budin's preference for the tubes of Ribemont, believing that obstruction by mucus in the trachea is a much more common cause of asphyxia than is usually believed, and one that is amenable to relief by the tubes in question. The tubes of Chaussier and of Depaul he thinks less effective. He is not in favor of the Sylvester or the Schultze methods, believing that if used in the pale stage of asphyxia the flaccidity of the muscles of the tongue and throat permits the walls of the pharynx to fall together and produce valvular closure of the air-passages in inspiration. In using Ribemont's tubes, the infant should be wrapped in warm clothes and laid on a table, its shoulders raised by a folded towel under them. The left index finger should be passed into the pharynx till it reaches the arytenoids. The tube is then to be passed along the palmar surface of the finger, and thus guided into the glottis. Its position should then be tested as follows: 1. The finger, passed along the posterior surface of the tube, is in contact with the smooth metal until it reaches the posterior edge of the larynx. 2. On rotation of the handle of the tube the larynx is also rotated. 3. If, on blowing into the tube, there is no noise, but inflation of the chest, the position is correct. If the tube is in the œsophagus there will be a gurgle and the abdomen will become distended. 4. When the lungs have been inflated their elasticity expels the air with a murmur. No such escape of air attends inflation of the abdomen. Budin saved three children by this method when all others had failed, plugs of mucus being aspirated from the trachea. Zabala ⁴⁴_{Sept., '93} is an enthusiastic advocate of Ribemont's tubes, and has used them successfully in several cases where other methods failed. The conclusions of his article concerning the instrument are: 1. It allows the extraction of foreign substances from the trachea and bronchi, making inspiration easier and diminishing the probabilities of infection with all its consequences. 2. It gives a certain means of introducing air into the lungs. 3. The danger of producing emphysema of the lungs is avoided. 4. It is cleanly, as opposed to insufflating from mouth to mouth or from mouth to nose.

Tarnier ⁶_{May 6, '94} relates a case in which a child was delivered in-

strumentally, the liquor amnii being infected. On the seventh day there were convulsions, and on the eighth pneumonia. It was assumed that meconium was swallowed with the first respiratory efforts. Eventually a patch of erysipelas appeared on the right cheek. The ultimate result of the case is not stated.

Legry and Dubrisay²_{June 30, '94} report two cases in which the mothers recovered, but the infants died. In the first case the mother was a primipara and the membranes ruptured prematurely. The liquor amnii became fetid, labor being delayed by rigidity of the cervix. The child was born asphyxiated and covered with fetid slime. Mucus was aspirated from the air-passages, and the child revived. It died, when 60 hours old, of well-marked bronchopneumonia. In the second case the mother had a profuse, greenish, vaginal discharge. Forty hours after rupture of the membranes the child was delivered spontaneously. Nitrate of silver was applied, in solution, to the eyes. The child died in eleven hours, and pneumonia and pleurisy were found at the autopsy. The pleural and other fluids and the tissues contained streptococci, and the same organisms were found in the vaginal discharges of the mother.

Muscles.—Gaudier²_{July 28, '94} reports two cases of hæmatoma of the sterno-mastoid in very young infants, showing that this condition is not always of obstetric origin, but may be produced after birth. It is true that in most cases the condition is due to violence during delivery, the result either of the obstetric forceps or of uterine pressure, but it may occur weeks or even months after birth, as the result of external injury or of rupture of the fibres of the muscle, caused by violent effort or strain. In each of the cases reported the lesion was apparently due to struggling during vaccination. The symptoms, prognosis, and treatment are the same whatever the cause of the injury, and complete recovery without deformity may be anticipated in all cases. Crandall⁵⁷_{June, '94} reports a case of hæmatoma of the sterno-mastoid in which the injury was probably due to the obstetric forceps. The child was 5 weeks old when first seen by the reporter, and still carried the mark of the forceps on the right parietal bone, also a scar under the left ear and the angle of the jaw on the left side. The tumor was a small fusiform mass within the muscle, semisolid, without inflammatory conditions, and not painful on pressure. Two weeks

later the tumor had decreased in size and was evidently undergoing reparative changes.

Nerves.—An important study concerning the anatomy and physiology of the nervous system in the newborn has been made by Westphal⁸⁶⁶_{June, '94} who found a very decided diminution in the indirect excitability for both currents and in the direct faradic excitability. Galvanic currents strong enough to produce intense tetanus in the adult caused only slight contraction in the newborn. Distinct variations were observed in the behavior of different nerves and muscles of the same and identical nerves and muscles of different subjects. The contraction was slow in all cases. The resistance of the skin was high. A study of the nerves was made by the osmic-acid method. The nerve-fibrils showed a minimum development of the myelin sheaths, different fasciculi of the same nerve presenting different phases of development. The axis-cylinders were universally present, greenish in color, with a medullary sheath in places. The presence of the sheath of Schwann was doubtful. Ranvier's nodes and the arrow-markings of Schmidt were not seen. The nuclei were large, often granular, and occasionally surrounded by protoplasmic masses. The fibres are finer in the adult than in the newborn. From the third to the sixth week of life the myelin sheaths become more numerous and the diameter of the fibre is doubled. At eight months the gaps are few and small, though the cross-section still shows a spotted appearance. The muscular fibres of the newborn infant are almost circular and gradually become polygonal, their diameter being from ten to twelve micromillimetres. Muscle-buds are numerous and nuclei frequent. In explanation of the slow electrical contraction the reporter calls attention to the histological resemblance between degenerated nerves and the nerves of the newborn.

That common but interesting condition, tetanus neonatorum, is discussed by Papienske,¹¹²_{Mar., '94} who reports ten cases with one recovery. His conclusions are as follow :—

1. Traumatic tetanus is caused by Nicolaier's bacillus, which gains entrance into the wound by means of dust, bits of wood, etc.
2. Tetanus of the newborn is identical with traumatic tetanus in adults, and is caused by infection of the umbilical wound by tetanus bacilli. The infection may be communicated by careless nurses, by dirty dressings of the stump, etc.
3. The

bacilli are limited to the point of infection and cause the development of toxins.

In nine of the cases the wound was cauterized and in one it was excised. The internal treatment varied, the case which recovered receiving no medicine. The author is of the opinion that tetanus in adults is identical with tetanus in the newborn, but the latter is more apt to be fatal. The most recent therapeutics show no favorable effect on the cause of the disease. As cases have recovered by all recorded methods of treatment, the disease may be said to be self-limiting. When the incubation stage is from one to five days in duration the case will always be fatal. With a long period of incubation recovery may occur. Wood²⁸⁵ June 30, '94 reports a case of tetanus seen on the seventh day of life and the seventh day of the disease. It was treated with 1-grain (0.065 gramme) doses of chloral hydrate every three hours, but died after twenty-four hours of treatment.

Peters²¹ June 30, '94 discusses true and false paralyses of the upper extremities in the newborn. He finds that the condition may be of central or peripheral origin. As the head of the child passes through the mother's pelvis the pressure of the pelvic bones may act disastrously upon the cervical plexus, or in other cases compression paralysis may be produced by the finger of the accoucheur introduced into the axilla to release an imprisoned arm. In deliveries by the breech the clavicle of the child is sometimes compressed at the point of exit of the sixth sacral nerve. In the first vertex presentation the right upper extremity may be paralyzed in the second, the left upper extremity, the explanation of which is found in the mechanism of delivery. Pseudoparalyses are designated as those in which the phenomena are excited by syphilitic processes in the epiphyses of the bones, the nerves themselves being uninjured. Buckens²⁵⁶ June 24, '94 reports the successful treatment of an infant with paresis of the upper extremities. The child's mother had a rachitic pelvis, the presentation was transverse, podalic version was practiced, and the forceps applied to the after-coming head. The child was first seen when 4 weeks old, the arms being entirely impotent. There was no response to the faradic current, and very little response to the galvanic. The muscles responded perfectly to one-half a microfarad of the condenser. An ascending continuous current was applied, five minutes at a time,

along the vertebral column, 20 milliampères being used without evidence of sensibility. Then with an automatic interrupter making 100 interruptions per minute the current was applied to the affected muscles. After this treatment had been given five times the child was able to move his arms. After twelve applications a current of 20 milliampères caused pain. After five weeks of treatment the cure of the paresis seemed complete.

White⁸¹_{Feb., '94} reports paralysis of the right arm in a newborn infant. The child had been born asphyxiated and had been resuscitated with some difficulty. Convulsions occurred during the first three days of life, then there was gradual improvement, and within a month, without especial treatment, the paralysis disappeared. Probably the cause of the paralysis was intra-cranial hæmorrhage, and relief came when the clot was absorbed. In the birth paralysis described by Gowers there is injury to a branch from the sixth cervical nerve to the brachial plexus, the paralysis usually being permanent.

Ferreira⁷³_{Oct. 21, '93} reports a case of syphilitic pseudoparalysis which yielded in twenty days to treatment with mercurial inunction and Van Swieten's solution internally. He cites this and numerous other cases to demonstrate the promptness with which this disease may be cured, notwithstanding the contrary view which was advocated by Parrot.

Peritoneum.—Generisch³³⁶_{Apr. 14, '94} discusses lesions of the peritoneum, which are not so rare in the newborn as is sometimes supposed. Zillner has reported four cases in which fatal peritonitis seems to have been excited during labor by a sigmoid flexure over-filled with meconium. Paltauf also was quoted as having observed perforation of the transverse colon in connection with peritonitis. He considered that the compression of the meconium during labor was not the only factor which caused rupture of the intestine, but that on account of coprostasis great tension of the intestinal wall was induced, and subsequently stercoral necrosis, which led the way to perforation.

In Generisch's case, which was dissimilar to those of Zillner and of Paltauf, death resulted from perforative peritonitis. There was a pus-focus in the umbilical region, bounded by the abdominal wall and the coils of intestines. It was connected with a funnel-shaped passage leading to the lower portion of the ileum. The

large intestine was thinner than the small intestine. The abscess-wall was lined with firm granulation-tissue, the abdominal wall was the seat of phlegmonous infiltration, the intestines were firmly matted together, and all the surroundings indicated a process of considerable duration. The explanation of this peculiar case is that there was an anomaly of development: either a Meckel's diverticulum had ruptured or an umbilical opening connected with the intestine which had not closed.

Miller²_{Sept. 22, '04} found, by studying the records of the Moscow Lying-in Asylum, that in 75,000 autopsies on infants there were 36 cases of congenital atresia of the digestive tract,—21 in boys and 15 in girls. In 11 the occlusion was situated in the ileum, in 8 in the rectum, in 7 in the duodenum, in 5 in the jejunum, in 3 in the œsophagus, and in 2 in the colon. In most of the cases there had been a distinct history of peritonitis during intra-uterine life. From these data it was concluded that peritonitis was the most frequent cause of the atresias of the alimentary canal in the newborn.

Skin.—Semet²_{May 5, '04} calls attention to the mistake which is sometimes made in confusing œdema with sclerema neonatorum, the pathology and the prognosis in both being different. Œdema is chiefly due to weakness of the right side of the heart and insufficient action of the respiratory muscles. Owing to feeble inspiratory movements thoracic aspiration is diminished, thus causing increased distension of the veins. Œdema is usually most marked in the lower limbs, the genital organs, and the lower part of the abdomen, the œdema of the upper limbs, the face, and eyelids being usually less marked. The skin is first pale, then red, and the face may be cyanosed. There is pitting upon pressure, unless the œdema is extreme. The skin is cold, but the axillary temperature is not lower than the rectal, the latter being subnormal. The œdema may appear during the first few days of life, or may be delayed until the third month. The hygienic surroundings of such children are usually bad, but the prognosis is often good if the treatment is judicious. In sclerema there is also great feebleness in the infant, but the parts first affected are the back and shoulders, the skin being hard and tough. The disease is progressive and the prognosis bad.

Logan¹⁸⁷_{July, '04} discusses purpura hæmorrhagica in the newborn.

He considers it a rare disease, having seen it but three times. In the first case there was persistent bleeding from the umbilical stump, which was finally checked. Diffuse hæmorrhages under the skin, the mucous membrane of the mouth, and the conjunctiva occurred, then jaundice, and finally death at the end of the second week. The second case was seen only once, when 10 days old. It was jaundiced, and there were purpuric patches on the skin. In the third case the purpura did not begin until the ninth day, and was more abundant on the tenth, blood flowing freely from the umbilical wound. Death resulted two and a half days after the bleeding began. A very careful post-mortem examination was made, and the conclusion reached was that such cases are infective, the same as septicæmia and tetanus; that the microbes enter at the umbilicus, collect in masses in the capillaries, and then cause necrosis with extravasation of blood. The effective method of treatment consists in prophylaxis, cleanliness of the navel being its chief factor.

Garthright⁸¹_{Dec., '88} reports an interesting case of maternal impression upon the fœtus. A man was burned about the hands, arms, face, and neck by an explosion of powder. His wife was five months pregnant at the time, and took care of him. When the child was born the entire surface of the body presented an appearance similar to that of the father after he had experienced his burns. In a few days the skin peeled off, and the child then presented a normal appearance.

Hartzell⁵¹_{May, '94} saw a case of syphilitic pemphigus in an infant 3 weeks old. The eruption was on the palms of the hands and the soles of the feet, and consisted of small, flat bullæ, circular, with a narrow inflammatory areola, and filled with sero-purulent fluid. Inunctions of mercurial ointment and vaselin soon caused improved nutrition, and in two weeks the cutaneous symptoms had disappeared.

Moynan⁶_{July 7, '94} saw a peculiar case of pigmentation upon the back of an infant, beginning at the level of the seventh cervical vertebra, the skin being as black as that of a negro and extending downward and outward on either side around the inner margins of the scapulæ. No other abnormality was apparent.

Lemaire¹²⁶_{Jan. 15, '94} in a paper upon erysipelas in the newborn, states that the disease may develop not only about the umbilical

wound, but also around a vaccination wound and around the conjunctiva. Histological examination shows accumulations of streptococci in the lymphatic vessels. There may be a few bacilli in the superficial region of the derma, but none in the epidermis. At first the fever is not excessive, and it may not be noteworthy until the second or third day. If the child do not quickly die there may be several resulting abscesses, and death may ensue from the fifteenth to the twentieth day. If recovery take place it may be long in coming, being delayed by athrepsia or infectious diarrhœa. In cases of puerperal origin, Lemaire considers the cause to be an attenuated puerperal septicæmia in the mother. He recommends for treatment applications of hot solutions of boric acid and subcutaneous injections, twice a day, of 20 grammes (5 drachms) of saline solution.

Stomach.—Damourette²¹¹_{May 13, '94} proposes the following plan of treatment for gastro-intestinal dyspepsia in the newborn: 1. Disinfection of the digestive tube with calomel, in doses of 0.05 gramme ($\frac{3}{4}$ grain), two or three times daily at intervals of an hour. 2. 0.10 gramme ($1\frac{1}{2}$ grains) of benzo-naphthol dissolved in milk and repeated hourly until 1 gramme ($15\frac{1}{2}$ grains) has been taken. To be continued until relief is obtained. 3. Irrigation with warm boric-acid solution, 4 to 100, per rectum. A quarter of an hour before each nursing a coffeespoonful of the following mixture should be given:—

R Pepsin,	.	.	.	.	.	0.50 gramme ($7\frac{3}{4}$ grains).
Acidi hydrochlor.,	.	.	.	.	.	gtt. v.
Mucilag. jalap.,	.	.	.	.	.	60.00 grammes (2 ounces).

Surgery.—Wagner¹¹²_{Apr., '94} records a case in which both scapulæ of a newborn infant were fractured. The child, the mother's ninth, was a face presentation with chin anterior. Delivery was instrumental. The child was cyanotic, and the hot bath and cold affusion had no effect. Schultze's method of swinging produced free respiration after three minutes. The arms, head, legs, and umbilicus, anus, and genitals were examined and found in good condition. When 5 weeks old the mother noticed a peculiar crackling sound whenever it moved its arms. Examination showed that both scapulæ were fractured, the fracture extending from the supra-scapular notch through the spine and infra-scapular fossa. There was no evidence that the child had fallen.

[This was probably a case in which the method of resuscitation employed had something to do with the lesions found. The author thinks the fractures were congenital. It would seem more reasonable to suppose that the violence exercised in swinging the infant should have snapped the fragile scapulæ. While the method is a most effective one when skillfully used, it is quite possible that it may result in accidents in the hands of the unskillful or the maladroit.]

McKenna¹⁶¹_{Apr., '94} trephined a newborn infant for depression of the cranial bones produced by the obstetric forceps. The child was comatose when the operation was performed, the depression being in the frontal region. The trephine was used over the coronal suture, the bone elevated, the button replaced, and the wound dressed. In five minutes the child opened one eye and after an hour cried. Recovery was complete.

Schimmelbusch⁴_{Jan. 1, '94} removed a tumor from the neck of an infant 3 weeks old, on account of urgent dyspnoea. The tumor was as large as a hen's egg, hard and firm, and extended from the chin to the sternum. It was deeply situated beneath the muscles of the neck and encroached upon the larynx. It was diagnosticated as a strumous development. Breathing was at once relieved by the operation. The tumor contained accumulations of epithelium and cysts which were lined with cylindrical epithelium. The case was considered as an illustration of the rare condition of congenital struma. Virchow stated that the specimen was a very rare one, and regarded it as a teratoma and not congenital struma.

TERATOLOGY.

Willetts²_{Mar. 26, '94} describes a sexless monster without genitals or anus. There was a spina bifida as large as an orange, and a sac upon the abdominal wall containing the liver, spleen, stomach, and small intestine, and double talipes valgus. Pennell's⁹_{May 6, '94} case was also sexless, with ectopia of the heart and the abdominal and pelvic viscera; the cord was only four inches long, and the placenta was adherent to it for its entire length. The rectum terminated in a blind pouch, and there was no anus. There was a spina bifida as large as an orange, double equino-varus, and deformity of both legs and of the great toe of the left foot.

Ries¹⁴_{Nov. 12, '98} saw a case of dicephalus tetrabrachius, the monster

being double above the umbilicus and single below. The sex was female.

Herrick¹⁰⁰⁶_{Apr., '94} reviews Leonowa's theories concerning the anencephalic and amyelic nervous systems, reaching the following important conclusions: 1. The development of the peripheral sensory nervous system does not depend upon the central nervous system, since the former can occur and develop progressively in the total absence of the encephalon and even of the spinal cord. 2. The peripheral sensory-nerve fibres originate from cells of the spinal ganglia and are the prolongations of their axis-cylinders. For this reason we ought to look upon the cells of the spinal ganglion as a primary nucleus,—as a veritable nucleus of sensory fibres.

McLin¹³⁹_{Apr., '94} discusses the evidence with reference to the development of cyclopean monsters, concluding that they indicate arrested development or else the result of compression by the amnion. Cerrachio¹⁶⁴_{Sept. 20, '94} saw a case of acephalus, with deformities of the skeleton, which bore a resemblance to the anatomy of the dog. Kid¹⁶_{Sept. 1, '94} reports a case of anencephalus with one nostril, spina bifida, and double talipes.

Bannan⁵⁹_{June 23, '94} also reports, in an interesting paper, a case of anencephalus. Austin⁴⁵¹_{May, '94} describes a case of anencephalus, and gives a *résumé* of eight cases which have been reported within the past eighteen years.

Sherrill's¹⁸⁶_{Sept., '94} case of anencephalus had many deformities: meningocele; no eyes; jaws resembling those of a hog; absence of the left arm. A sac upon the abdomen contained most of the small intestine, stomach, and liver. The genitals were rudimentary, and there was exaggerated talipes varus. Harrel's¹²⁰_{Mar., '94} case of anencephalus was unusually large, weighing thirteen and a half pounds. It had a large spina bifida.

Dufour²⁰³_{June 1, '94} reported a case of exencephalus hyperencephalus,—Saint-Hilaire's classification. The eyes and genital organs were rudimentary and the ears very large, as is customary in this class of deformities. The influence of alcoholism in one or both parents, in producing such imperfect offspring, has been remarked by many writers. Guéniot¹⁴_{Oct. 11, '93} reported three cases in which exencephalus was present, and referred to the rôle which amniotic bands often performed in producing foetal deformities and imper-

fections. Saintin and Tersen⁵⁷⁷_{Mar., '94} presented a case of exencephalus hyperencephalus, with deformity of the feet (*pie'd bot*). Hoeck³¹⁷_{Jan. 27, '94} saw a case of ectopia of the left testis, the organ being located in the perineum near the rectum, and another case with peromelia affecting the upper right extremity, the defects being numerous, with absence of both legs.

Braun⁵⁷_{Apr. 15, '94} saw a case of ectopia of the heart, the latter being outside the body, the right ventricle lying forward and the left ventricle backward. The child was living when seen thirty-six hours after birth. The sac containing the heart was kept moist with a saline solution.

Windle²⁷⁷_{Oct., '93} gives the following summary concerning double monstrosity: 1. The cause is a superfluity of germ-plasm in the germ. 2. This superfluity leads to a fission prior to that which occurs in normal development. 3. The superfluity may be traced to retention of superfluous germ-plasm, to introduction of the same from faulty segmentation in the formation of the spermatozoa, or to the entrance of more than one spermatozoon into the ovum. 4. The extent of the deformity depends upon the number of superfluous determinants retained in or introduced into the ovum. 5. In homotopic redundancy the superfluous determinants follow the normal course in development; in heterotopic redundancy, the abnormal course. 6. Absence of normal determinants may co-exist with the presence of abnormal ones in the same germ. 7. In case of parasites degeneration may be an additional factor in producing the condition. 8. Excess of growth without superfluity of parts depends on different causes from those which produce double monstrosity.

Westgate¹_{Sept. 1, '94} saw a remarkable combination of deformities (see annexed picture), including complete exstrophy of the liver, intestines, and stomach of each of twin fœtuses, which were united at the xiphoid cartilage. There was a single placenta with cord four inches long, each fœtus being in a separate amniotic sac.

Richmond¹⁰⁹⁹_{Apr., '94} reports a case of sternopagus, delivery being impossible without dismemberment of the children. The mother died from shock an hour after delivery was completed. [Assuming that the diagnosis had been made or was possible in this case, Cæsarean section would have given the mother a chance for her life. It is said that the children were dead before operative

procedures were begun; also, that much violence in delivery was necessary. As the operation was done in a large city,—Denver, Col.,—where help was abundant, it would seem that this course should have been taken.]

Waynbaum and Legry⁷_{No.19,'93} had a case of sternopagus delivered instrumentally with great difficulty. Both children died. Kirchhoff³¹⁷_{Mar.10,'94} reports a remarkable case of thorakopagus from a tubal pregnancy of the fifth week, removed by abdominal section. Union seems to be along the greater portion of the thoracic wall.



DOUBLE FŒTAL MONSTROSITY. (WESTGATE.)

New York Medical Journal.

Kronig's³¹⁷_{Feb.17,'94} case showed a defect in the radius of both arms. A case of pseudencephalus is reported by Sloan³⁶_{Mar.,'04} not materially differing from other cases of anencephalus noted here.

Cases of acephalus and micromelus are reported by Hirst.⁹_{Feb.17,'94}

Ballantyne³⁶_{Oct.,'93} reports a case of foetus compressus, or papyraceus, born at term, together with another very large and healthy child. The abnormal twin was in a sac, which appeared as a fatty thickening on the outer surface of the sac which enveloped the normal child near the placental border. It was five and a half centimetres long, three centimetres broad, and two or three milli-

metres thick. It was supposed that its death occurred in connection with an attack of vomiting from which the mother suffered in the second month of her pregnancy. The same author, ³⁶_{Oct., '93} in a series of teratological studies, discusses allantoido-angiopagous twins, including paracephalus dipus acardiacus, which he describes in detail.

Rousseau ¹²⁷_{Oct. 12, '93} reports a case in which there was partial division of the cranium into two segments. The deformity is a very rare one and belongs to the family of monosomians. The author suggests the term *craniodyme* as applicable to the variety.

Thymus.—Beneke ²_{Apr. 14, '94} refers to the danger of death with enlarged thymus, with or without laryngismus stridulus. A large thymus may be so developed as not to encroach on the air-passages, while, again, a small thymus may cause undue pressure and suffocation. With an enlarged thymus, especially if the child be fat, sudden bending forward of the head may cause such pressure upon the trachea as to produce dyspnœa or even suffocation.

UMBILICUS.

Hurt ²⁰⁷_{Dec., '93} calls attention to the habits of newborn animals as giving a hint in the treatment of the stump in the newborn infant. The animal lies upon the ground and the stump is soon covered with the dirt or litter of its bed, furnishing a protection from external noxious influences. He recommends as a dressing for the stump in the newborn baby a powder composed of equal parts of aristol, lapis caliminaris, and subnitrate of bismuth, the powdered stump to be wrapped in soft linen and left undisturbed until it falls off.

Duke ²²_{Jan. 3, '94} believes in the utility of a funis-clamp as a means of cleanliness and antiseptis. The instrument he has devised is simple and effective, and the idea of treating the stump in that way is novel and decidedly commendable.

Westphalen ³¹⁷_{Mar. 17, '94} observed two unusual cases of hæmorrhage from the umbilical vessels during labor. In the first case there was congenital syphilis, with bleeding from the artery of the cord; in the second the umbilical vein ruptured and there was an hæmatoma of the cord, which was probably developed after the birth of the head.

As a warning against tying the umbilical stump too near the

body and thus running the risk of hæmorrhage, Lattey ²_{June 16, '94} calls attention to the fact that there is a central sinus in the cord without definite walls, arising from the lower intercostal arteries and sometimes projecting as far as two inches into the cord from its union with the body.

Doktor ⁵_{June, '94} mentions three factors which make the stump of the cord an easy avenue for infection: first, the wound involves not only the skin and deeper tissues, but also the peritoneum; second, three large vessels are exposed in the stump; third, a quantity of dead tissue must remain for some time.

Taylor ¹³¹_{Dec., '93} records three cases of umbilical hæmorrhage, all occurring in the same family. In the first the bleeding continued from the seventh to the fourteenth day, when death resulted. In the second, born four years after the first, death resulted after three days of bleeding. In the third, born four years after the preceding one, bleeding came on soon after birth and was restrained by tannin solution, the child recovering.

Grayson ¹⁴³_{Apr., '94} saw a case of umbilical hæmorrhage beginning on the eighth day after the separation of the stump and continuing thirty-seven hours. Death resulted from exhaustion, though the hæmorrhage had been checked some hours before by passing needles through the umbilicus, at right angles to each other, and winding a figure-of-eight ligature around them. It is observed that in most of the recorded cases of hæmorrhage of this character the bleeding does not begin until the umbilical stump separates. Either the blood of the newborn coagulates less readily than that of other human beings or we must call most of the cases illustrations of hæmophilia.

Gambert ²³⁶_{Dec., '93} reports a case of entero-umbilical fistula, first observed on the fifth day after birth. It was caused by the ligature with which the umbilical stump had been tied, either the omphalo-mesenteric canal or a Meckel's diverticulum having been prolonged into the cord. A granulating tumor was apparent at the umbilicus, with an opening through which gas and fæcal matter exuded. The treatment consisted in cleanliness and the application of the actual cautery to the granulating surface. The result was satisfactory, the fistulous opening being effectually closed and resulting in no further trouble.

Two cases of general dropsy in the newborn are reported by

Ballantyne,⁵¹_{Feb., '94} both resulting fatally. This condition is a symptom of several diseases. It may be due to intra-uterine, cardiac, renal, or blood disorders, or to absence of the thoracic duct. It may also arise from causes inherent in the mother, which are transmitted through the placenta. About seventy cases have been recorded, and they have invariably resulted fatally within a few minutes or a few hours after birth.

DIETETICS OF INFANCY AND CHILDHOOD; INFANTILE DISORDERS.

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BREAST-FEEDING.

Ludwig ⁹⁵_{B.46,H.2; June 9,'94} has found that the amount of fat contained in the milk of nursing women is considerably increased in cases of tuberculosis (when any secretion of milk takes place at all), while the remaining constituents undergo no noteworthy change. In case of albuminuria, particularly if the amount of albumin lost is large, and also when the amount of albumin is small, but nutrition is impaired, the amount of proteids in the lacteal secretion is notably and the amount of sugar slightly diminished. In case of profound anæmia following hæmorrhage in the course of labor the lacteal secretion is deficient in solids, in fats, and in sugar. In marked pyrexia the amount of solids and of fats falls, while the amount of proteids and sugar varies. The milk of syphilitic nursing women was found to be poor in solids, in fats, and in sugar, while the amount of proteids was variable.

Damourette ²⁰³¹_{'94; Aug. 4} has collected observations of the disorders from which infants suffer when the mother or nurse has galactophoritis. First comes diphtheroid stomatitis, usually mild, and not lasting over a week. Frequent and always serious are retro-pharyngeal abscesses; they are difficult to diagnose. Some twenty interesting cases of gastro-intestinal disorders are noted; they are classified as acute dyspepsia, acute gastro-enteritis, and infantile cholera. Careful examination of the nipples and the milk often explains the appearance of these troubles. Superficial—that is, not cutaneous—multiple abscesses are often due to a slight abrasion. But deep multiple abscesses occur, and show a more generalized infection; they are always serious. From the cause in question Damourette has traced submaxillary abscess, otitis media and externa, dacryocystitis, and purulent ophthalmia.

They greatly vary in severity, and are usually mild. In one case acute septicæmia without disturbance of the alimentary tract was observed. Infantile ecthyma is often due to galactophoritis in the nurse. Broncho-pneumonia occurs as a secondary result, following intestinal mischief caused by the disease in the nurse's breast.

ARTIFICIAL FEEDING.

Rotch⁹⁹_{Nov. 23, '98} remarks that the very essence of that practical information which we have gradually acquired lies in the discovery that there is no one perfect nutriment for young human beings, as a whole, but that it is the changes in the various elements of the breast-milk which satisfy the demands of the individual, and then in time suits the many to such a degree that the protean food has erroneously come to be looked upon as our special, unchanging nutriment. To thoroughly understand and successfully solve the feeding problem of the early months of life, a knowledge of the changes which take place in the mammary gland from many causes must be clearly kept in view. The cows on this continent which are best adapted to produce milks which can be used for imitating human milks are the Durham, Holstein, Friesien, American grades and common natives. The latest researches on human breast-milk show that the albumin of the milk is not merely an exudation from the lymph-vessels supplying the mammary gland, but that it is actually modified in the breast; thus the mammary gland, besides being an elaborator and a store-house for infant nutriment, is also a modifier.

Edes⁵⁹_{Aug. 18, '94} has found that milk prepared in the following manner is of great value when other preparations have been found unacceptable: A pint ($\frac{1}{2}$ litre) of milk is gently warmed; into it is dropped, very slowly and with constant stirring, about 20 minims (1.3 cubic centimetres) of the dilute hydrochloric acid U. S. P. The milk is stirred until it cools. A fine flocculent coagulum is produced, floating in the whey, which is easily accessible to the digestive secretions. The casein is retained and used instead of being separated out as a distinct product. The preparation is not bitter.

Patterson¹⁹_{Feb. 3, '94} has adopted the use of cream, or cream and milk, with a food which consists of the dextrin and maltose products of wheat and barley alkalinized. The action of malt diastase

is identical with the action of the salivary and pancreatic secretions, ptyalin and amylopsin.

Hauser ⁴_{Aug. 14, '93}; ²_{Sept. 30, '93} describes a new method of feeding infants. He calls attention to the objections to a wet-nurse and the difficulties in artificial feeding, and states that he has used, in Henoch's clinic and elsewhere, a preparation introduced by Rieth, in which, after the smaller quantities of fat and sugar in cows' milk have been corrected by the addition of cream and milk-sugar, egg-albumen, heated above 130° C. (276° F.), is made to supply the deficiency in albumin. The preparation has the same composition as woman's milk, and is called albumin milk ("Eiweissmilch"), but would be more correctly named albumose milk. The difference between it and ordinary milk, when subjected to artificial digestion, is obvious. If feeding with cows' milk properly prepared and sterilized do not suit, the author uses this preparation.

Small ⁷⁷_{July, '94} calls attention to the fact that a baby should be given a little water between each feeding. If a child is given no water it will take milk on account of thirst and thus be overfed, with the consequent ill effects of such a condition. The neutralizing effects of lime-water upon milk acidity is, according to McIntyre, ¹⁹²_{Aug., '94} more chimerical than real; to secure this desirable condition he suggests the use of chemically-pure bicarbonate of soda, because its alkalinity is much greater and because the CO₂ eliminated in the intestinal tract is a great stimulator of secretion.

Oppenheim ¹_{July 21, '94} in ninety cases obtained most happy results from the following food preparation: Mix a full teaspoonful of flour and half a cup of cold water; to this add 12 ounces (375 cubic centimetres) of boiling water and boil for ten minutes in a double boiler. Remove the inner vessel and add to the mixture another 12 ounces (375 cubic centimetres) of cold water and half a teaspoonful of maltine. Allow it to stand for fifteen minutes in order to let the diastase act upon the starch. Replace the vessel in the boiling water and boil again for fifteen minutes. This mixture, after being strained, should be added to an equal quantity of fresh milk. Naturally, one may change the proportion of milk according to individual cases.

J. Lewis Smith ⁵¹_{July, '94} recommends a mode of alimentation which can be easily employed by the poor in tenement-houses as

well as by those in better circumstances, and which he thinks will be more successful in saving life than the other methods now in common use.

In no institution in America are there so many young foundlings nourished by the bottle as in the New York Foundling Asylum. Under the age of 2 months they receive every two hours, preceded by 6 or 8 drops of the essence of pepsin, or the elixir of digestive ferments, 1 ounce (31 grammes) each of dextrinized barley-gruel and the Pasteurized upper part of milk, and every hour also 10 drops of panopepton. To prepare dextrinized barley-gruel and cows' milk for nursery use a heaped tablespoonful of flour, which has been subjected to the prolonged action of heat, should be added to 30 tablespoonfuls of boiled water for an infant of 3 months, or to 25 tablespoonfuls for one of 6 months, and boiled from three to six minutes to facilitate admixture. When it has cooled to blood-heat a drachm (4 grammes) of diastase should be added to it. This in a few minutes changes the starch into dextrin and maltose. This predigestion renders it thinner, and a useful and convenient diluent for the milk. The most indigestible constituent of cows' milk is the casein. While the relative proportion of it is diminished by employing the upper third or half in the bottle or can, the addition to it of the dextrinized gruel mechanically separates the particles of casein and tends to prevent the formation of thick curds and promote a loose and friable coagulation; so that it is more readily digested than the casein of milk not treated in this manner.

Collingwood ²⁶⁷_{May 15, '94} states that, although a phenomenal infant may assimilate cows' milk, the average baby, if deprived of breast-milk is more likely to thrive on condensed milk.

Douglas ¹⁸⁵_{Feb., '94} states that all manufactured foods are more or less defective in vital points; nearly all of them contain from 3 to 5 per cent. of starch; the sugar varies from too little in some to too much in others; some contain dextrin; all are deficient in fat and albuminoids. This latter deficiency very largely explains the errors in shape and nutrition, slowness in development, waxy color, and tardy teething in children fed on these foods. If given to children, butter or cream must also be given regularly to make up the deficiency in fat and to regulate the bowels. To supply the child with sufficient nourishment by these manufactured foods

many pints of fluid would have to be given during the twenty-four hours, causing immense dilatation of the stomach, with consequent weakness of its muscular walls and imperfect gastric fluid. This matter was reviewed in last year's ANNUAL, and it is gratifying to note that it is awakening wide-spread attention and that the viciousness of this plan of feeding is at last becoming generally apparent. Douglas finds Rotch's method entirely satisfactory, and indeed the general consensus of opinion favors it. This plan consists in giving from 10 ounces (310 grammes) daily during the first week in ten different feedings of 1 ounce (31 grammes) each; 40 ounces (1250 grammes) at a year old in five feedings daily of 8 ounces (250 grammes) each.

STERILIZATION OF MILK.

Ashby⁹⁰_{May, '94} states that milk is at best a difficult fluid to sterilize, and is especially so when it contains a large number of organisms. The chief bacillus which it contains is the lactic-acid bacillus, which grows rapidly in milk at the ordinary temperature of a room or kitchen; carbonic acid is slowly given off, and the milk becomes acid from the presence of lactic acid, when coagulation of the casein (or caseinogen) takes place. The lactic-acid bacillus is destroyed by being exposed to a temperature of 70° to 75° C. (158° to 167° F.) for ten to twenty minutes, though its spores seem to be able to resist this temperature. Milk also contains other bacilli, such as the butyric-acid bacillus and the potato bacillus (*bacillus mesentericus vulgaris*); these organisms gradually give rise to the curdling of the milk, but with an alkaline reaction, and the formation of peptones, leucin, and tyrosin; these bacilli are much less easily destroyed than the lactic-acid bacillus, resisting a temperature of 100° C. (212° F.) and requiring a temperature of 110° to 120° C. (230° to 248° F.) to destroy them. Various other cocci or bacilli are found in milk; some of these, by their growth, give rise to poisonous peptones and albumoses, and thereby render the milk not only unfit for food, but deleterious. But besides these saprophytic organisms, which may be present in milk, there may be various pathogenic microbes, such as those of tubercle, typhus, cholera, diphtheria, various pus-cocci, streptococci, and pneumococci. These latter are, fortunately, much more easily destroyed than the saprophytic.

According to experiments of Yersin, Bitter, Lazarus, and others, thirty minutes' heating at 70° C. (158° F.) is sufficient to render them inert. They are still more certainly destroyed at 100° C. (212° F.). The number of organisms to be found in milk a few hours after milking is sometimes extraordinary; thus, in milk supplied to a childrens' hospital, Feer found a few hours after milking in winter 50 to 70,000 per cubic centimetre (15½ minims), in summer 300,000; while after standing at an ordinary room temperature for twelve hours there were 14,000,000. In milk which had been sterilized in a suitable apparatus and allowed to stand for twenty-four hours, there were only 200 to 400 per cubic centimetre (15½ minims).

The effects produced on infants and others by taking milk containing large quantities of micro-organisms will vary according to the nature and number of these organisms and the capabilities of the stomach to resist their development; or, in other words, the quality and quantity of the gastric juice secreted.

The Soxhlet type of sterilizer is still considered the best. The proper temperature at which milk should be sterilized has been the subject of much controversy. A high temperature appears to change or decompose the casein, and it has been stated that a temperature of 100° C. (212° F.) destroys the value of the milk as a food. The albumin is coagulated, the emulsion of fat interfered with, the latter being apt to separate in drops, the casein is less easily precipitated, and the taste of the milk is altered. At 70° C. (158° F.) for twenty or thirty minutes the lactic-acid bacillus is destroyed and the milk may be kept sweet sufficiently long for family use. Langermann has found that sterilizing at 100° C. (212° F.), if not continued too long, does not alter the taste of milk to any great extent and children rarely refuse to take it.

Kramsztyk's experiments show that when milk was heated at 72° C. (162° F.) for fifteen minutes the milk remained tolerably free from organisms for ten hours or so, but that in twenty-four to forty hours there were a large number of organisms in the milk thus treated. Heating to 90° or 100° C. (194° or 212° F.) gave much better results. It is important to obtain a clean milk and to get it a short time after milking. It is useless to attempt to render sterile a milk that is not clean, as no amount of heating

will render it fit for food. The milk is to be kept in the same vessels in which it is sterilized. If it has only to be kept for twelve or twenty-four hours at the most, and in a cool place, there is no necessity to sterilize at 100° C. (212° F.).

Langermann has experimented by feeding infants and young children with various milk foods, and an hour and a half afterward withdrawing a portion from the stomach and estimating the acidity and the number of organisms present in the stomach-contents. He found that a sterilized-milk mixture, which contained from 30 to 40 micro-organisms when it was taken by the infant, contained from 4000 to 6000 in an hour and a half after, when taken from the stomach.

He concludes that free hydrochloric acid acted as an anti-fermentative, and more or less so when in combination with the casein. The organisms found in the stomach were various; threads and spores of *penicillium glaucum* and *oidium lactic*, lactic-acid bacilli, butyric-acid bacilli, various "gas-forming" bacilli, cocci, and *sarcinæ*.

Budin and Chavane¹⁷ ⁶⁷³_{July 19, '94; Sept.} give the results obtained at la Charité Hospital from the use of sterilized milk. These results confirm the excellent ones previously reported by them in 1892 and 1893. Two children, whose mothers had not sufficient milk, were fed on sterilized milk, which they digested admirably and upon which they thrived better than the average. Sterilized milk given in addition to breast-milk is of great service to women with twins, as they can thus nurse their own children. Two cases, illustrated by tracings, proved this fact. There are certain infants who cannot support the milk of a wet-nurse, and in such cases sterilized milk is of great value, as shown by an instance in their service. Another child, born with harelip, who, for mechanical reasons, could not take the breast, thrived so well upon it that at 7 months it weighed 11 kilogrammes (22 pounds). One should also have recourse to sterilized milk when either or both parents are affected with syphilis. Budin reported four successful cases of this kind. The milk used is pure milk sterilized each morning in a water-bath, and used during the twenty-four hours. Milk mixed with water is often insufficient, owing to the fact that it is not rich enough in the butter, sugar, salts, etc., contained in the pure milk, and which play an important part in the alimentation

of the child. Under the influence of heating to 100° F. (37.8° C.) the casein undergoes certain modifications which greatly facilitate its digestion. The use of pure milk is much more simple for mothers as well as for nurseries and hospitals, as instead of regulating the quantity of water added to the milk by the age of the child, the same milk, pure, is given to children of all ages. Budin and Chavane are of the opinion that in the first months of life the milk should be invariably given undiluted with water. Each bottle sterilized contains enough milk for one nursing, and there remains nothing capable of undergoing alteration, as is the case when large bottles are used. They believe that the use of sterilized milk, properly directed and watched, constitutes a decided step forward in the progress of the hygiene of infancy. Fournier, in the discussion, spoke very favorably, from his own experience, of the use of sterilized milk in syphilitic babies. These could not be given to a healthy wet-nurse, and it was best to let them take the breast for a few days and then use the sterilized milk.

Huebner,^{366 90}_{p.144,'93; May,'94} after a fair trial, concludes that sterilized milk is not a satisfactory food for weakly and dyspeptic infants unless the sterilization is perfect when the child receives it. It was found practically impossible to sterilize milk handled in the ordinary commercial way, but that if the milk were conveyed at once to the hospital, it was possible to render it sterile. Immediately after receipt, the milk was diluted with one-third its bulk of sterilized 12-per-cent. solution of milk-sugar, placed in Soxhlet's bottles and boiled for three-fourths of an hour. After rapid cooling two bottles were put in the incubator for three days, and, if no change took place in that time, the remainder were used to feed the infants.

R. G. Freeman⁹⁴⁶_{Oct., '93} concludes that Pasteurization of milk at about 75° C. (167° F.) affords a safeguard against the deleterious effects of any bacteria which it may contain, without interfering with its nutritive qualities. At about that temperature it destroys efficiently the germs of cholera, typhoid fever, diphtheria, and tuberculosis, as well as the streptococcus pyogenes, the staphylococcus pyogenes aureus, and the bacillus coli commune. At about the same temperature it does not modify the size of the curds formed when milk is subjected to the action of gastric juice.

Milk after Pasteurization is best cooled in a water-bath. At about the above temperature it may be used, after peptonizing, to stop the action of the ferment.

Bendix ³⁶⁶_{Sept. 10, '94} has never observed that the health of the child has been impaired or digestive disturbances produced by the use of sterilized milk; on the contrary, the general health and appetite of the children were good, evacuations normal, vomiting never took place, and the weight of the children experimented with remained the same or increased. Since the danger of transmitting serious diseases from the animal to man by the germs contained in the milk can be avoided by sterilization, it is our duty as physicians, in all cases where we are compelled to resort to artificial nourishment, to insist on the use of sterilized milk only. He concludes that sterilization is better than Pasteurization, and is to be preferred, because, in heating to 102° C. (215.6° F.), not only does the digestibility of the milk not suffer, but, by sufficient care, the harmful bacteria and germs may be destroyed.

Renk ⁸⁴⁴_{Aug. 12, '94} remarks that it is a well-known fact and has been widely observed that sterilized milk standing for a long time suffers a change, in that a part of the fat separates from the emulsion and is liable to gather in considerable quantity on the surface of the liquid. This fat, which when warmed dissolves into large drops, can never, either through strong heating or violent shaking, be again changed into emulsion; and it is certainly more than questionable if, under such conditions, the physical properties of the milk remain unharmed and can be used as nourishment for babes.

Buckingham ⁹⁹_{Aug. 16, '94} has noted a practical point in the domestic sterilization of milk. It may be kept on ice for a long time, but when it is heated for sterilization it must pass through a fermenting temperature, and if the period of this medium exposure be unduly prolonged great damage may be done to the milk. It should be placed in a steamer already filled with steam, and not in a cold one over cold water and a slow fire. The milk should be cooled quickly. Sterilization must not be carried beyond 167° F. (75° C.), as a higher temperature will destroy the starch-fermenting ingredient of the milk, the galactozyme.

Plant ⁵⁸_{Oct. 30, '93} discusses the condition of milk purchased from the different dairies, handling of same, and the living-apartments of

foster-children reared in different localities of Leipzig, and concludes that there is an etiological connection between the disturbances of digestion in children and the very poor condition of the milk. He gives certain rules for sterilizing milk and recommends Soxhlet's method.

SCURVY.

This disease has only recently been recognized in children, and when the diagnosis is made cure is usually readily established by appropriate dietetic treatment. The number of American cases so far recorded is not large. They have occurred in New York, Boston, Philadelphia, Baltimore, and Cincinnati. Northrup⁵¹_{Mar., '94} read a paper calling attention to the disease in this country. The first case was not recognized during life, but its true nature was revealed by autopsy. The second case occurred in a babe, 16 months old, who after the fourth month, the mother's milk having failed, was fed on "something made to sell" labeled "baby's food." After twelve months the child showed two rows of irregular, ragged gums, through which the teeth barely protruded; the gums bled freely. The expression of the face was worried, the right thigh was enlarged, and the leg tender. The result of treatment fully confirmed the diagnosis of scurvy. The child was removed to the country; the proprietary mixture was stopped and the infant fed on fresh cows' milk, expressed meat-juice, baked potatoes, and oranges. In forty days the child was entirely well. The causative factor in all of the eleven cases mentioned was feeding on proprietary food or condensed milk. The disease is most apt to occur among the well-to-do, as they are better able to pay for proprietary foods. The statistics show that the age in which the disease was found most typical was the second year, and the prominent symptoms were swollen gums and painful and swollen thighs.

A peculiar and prominent symptom is scorbutic pseudo-paralysis. Taylor reported such a case in discussing Northrup's paper. The girl was 11 months old, and had been fed exclusively on a special brand of condensed milk, apparently thriving up to six or seven months. She was then unable to sit up, had a peculiarly-bent attitude, an indisposition to use the legs, and later on the trunk; there was a tender swelling on the right thigh, the

gums were spongy and bleeding, there was a slight rash on the whole body and a few purplish spots on the skin, and later a profuse perspiration. Rectal temperature was 102.5° F. (39.2° C.). The clinical picture was typical of scurvy. No drugs were given, but a correct dietetic regimen was presented and cure resulted. Pseudoparalysis is common in the lower extremities in the scurvy of children, and is readily distinguished from infantile paralytic affections. Jacobi⁵¹_{Sept., '94} remarks that what has been called rachitic pseudoparalysis is not paralysis, but simply a weakness of the muscles and nothing else.

The general opinion of the members of the Pædiatric Society—Crandall, Rotch, Starr, Blackader, Forchheimer, Lockwood, Booker, Edwards, Jacobi, and Watson—was that the only appropriate treatment is dietetic. The food should consist of fresh cows' milk, Pasteurized meat, and fruit-juices, preferably orange-juice, which may be given *ad libitum*. Proprietary foods are responsible for most of the recorded cases of scurvy. The English writers and most of the American observers consider that sterilization of milk at a temperature of 212° F. (100° C.) is apt to cause scurvy, and hence Pasteurization is recommended. Holt, Carr, and Fruitnight, however, do not believe that sterilized milk is a causative agent.

Walters²_{June 30, '94} writes that there is no doubt that scurvy, as described by Northrup and Crandall, is by no means uncommon, owing to the free use of prepared foods of late years. Several well-marked instances have come under his notice; it is frequently mistaken for other affections, such as purpura or rheumatism, etc., as unless the child has cut some of its teeth there will be no sponginess of the gums. The practical lesson is that no artificial or oversterilized food should be exclusively used for infants' food for more than a few weeks at a time. Carr⁵⁹_{June 30, '94} has also recorded some cases of the disease.

TEETHING.

Barret⁸⁰⁵_{Mar., '94} refutes the idea which held sway for a long time in medical literature, and still has a firm hold upon the mind of the laity, that the high death-rate in childhood is, to a considerable extent, dependent upon cutting the teeth, and shows that dentition itself is not the cause of the great mortality which

prevails among children. Teething is nothing more than one of the factors in human development. Although dentition goes on throughout the whole year, the high mortality is confined to a very few months. If teething were the cause of infantile mortality December should present as many diarrhœal deaths as July. Barret's long experience convinces him that the lancet is rarely needed.

McHatton, of Georgia,¹¹⁷_{May, '94} reiterates the now well-recognized fact that teething is a purely physiological process, sometimes, however, subject to perversion. He quotes Finlayson's statement that "this convenient theory of the dependence of infantile diseases on the process of dentition is of course now exploded, and it might be supposed that it needed no notice, but superstitions are difficult to kill. A tooth-rash is a splendid safety-valve, and when it resists our best efforts at treatment we can explain how dangerous it is to cure a rash in a teething child, lest it drive in the disease to some internal organ. The popularity of the idea depends partly on its saving a world of trouble to the physician, but also on its meeting the view of the parents; but if the beginner is ever to make any progress in the diagnosis and treatment of the diseases of infancy, he must take up the attitude of refusing to believe that any child is ever "seriously ill from teething."

Gundobin²¹_{Mar. 10, '94} states that in eighty children he has seen inflammations of the gums six times and general inflammation twice due entirely to teething. Twice he observed convulsions, both children being rachitic.

THE REARING OF FEEBLE INFANTS.

After a child has spent from two and one-half to three months in the incubator, it is not at all certain if it will be able to maintain life outside of it; methods of feeding, therefore, become very important, and the selection of the proper food of vital moment. In very feeble children, who cannot swallow, gavage offers many prospects of success. Adams¹⁰⁵⁸_{Feb., '94} has noticed the facility with which 3 ounces (93 grammes) of food can be injected through a tube into the infant's stomach and retained. The tube can be introduced with the greatest ease, and is more efficacious than the dropper. Holt considers that feeding by the tube is much better than allowing the child even the slight exertion of swallowing; the mother's breast-milk is, of course, the best food, and should be

obtained if at all possible; if not, a wet-nurse should be procured, but, as wet-nurses present many objections, probably cows' milk properly prepared is the typical substitute food for the infant.

Several years ago sterilization at 212° F. (100° C.) was generally believed to have solved the problem, and the New York summer infant mortality was greatly reduced, but the method was vigorously attacked by two investigators, Leeds and Davis, who stated that while children lived and many were saved on this diet, they were not properly nourished and were inclined to rickets; so that now the method of Pasteur—heating the milk to 167° F. (75° C.)—is that generally used for sterilization. The increase of body-weight is the only sure test of fulfilling the requirements of the infant feeding; hence, it is absolutely necessary to get this typical food, to ascertain the weight of the child, compare it with the age, and thus determine the child's capacity and regulate the quantity of food accordingly.

If cows' milk is selected it must be highly diluted; one-eighth of cows' milk is about as much as the premature baby can properly digest and assimilate. This can be given with barley-water or the milk may be Pasteurized with the water and the milk-sugar added. Lime-water may also be added in small quantities. The infant should be carefully handled while being washed and dressed, and not subjected to harsh treatment.

Holt, in a paper on "Gavage in the Treatment of Acute Diseases of Infancy and Childhood," ⁵⁹_{Apr. 28, '94} after an experience of upward of four hundred cases, and its daily use in three institutions in New York, formulates the following conclusions: 1. In premature infants its value has been well established on the continent of Europe, in connection with the use of the incubator. As yet we have had but little experience with it in this country. 2. It is useful in controlling persistent vomiting in very young infants where the vomiting occurs partly from habit and partly from exaggerated pharyngeal reflex. 3. In acute diseases where, for any reason, children refuse all food, or struggle violently against everything that is offered them. In very many cases of severe illness in children from 2 to 5 years of age, the point is reached, after four or five days have passed, when the child absolutely refuses to take anything, and nothing is gotten down excepting by holding the nose. This is, to my mind, one of the most promising

fields for the application of gavage. In very severe cases of scarlet fever, diphtheria, broncho-pneumonia, typhoid, and empyema just this necessity is felt. 4. In serious brain disease where the patient cannot be fed by ordinary means. This may occur in tubercular meningitis, chronic meningitis, and in many other diseases where delirium or coma is a symptom. Life is not only prolonged, but existence made more tolerable, and the patient is much more easily cared for by the attendants.

In most of the cases referred to the food given has been completely peptonized milk, diluted according to the age of the child; but for infants a milk-and-cream mixture in proportions suitable to the child's age. Stimulants, medicine, everything that is to be given may be poured in at once. In older children, where 6 or 8 ounces (186 to 248 grammes) at a time are given, gavage need not be repeated more than once in five or six hours. In infants the intervals should be one hour longer than the customary interval of feeding. Stomach-washing is required in conjunction with gavage in most cases in infants; once at least every day the stomach should be washed before feeding. Kerley ⁵¹_{Nov., '98} relates an experience similar to that of Holt, and fully indorses gavage, or forced feeding, in the management of infants.

INFANTILE DIARRHŒA.

In a note on diarrhœa and its relation to fruit and the feeding-bottle, J. Spottiswoode Cameron ⁶_{June 30, '94} finds that of 58 deaths amongst children entirely raised by mothers' milk none had uncooked fruit given them. In 6 of these cases the mother herself had eaten uncooked fruit. In 2 instances 1 of the mothers had eaten boiled apples and the other cauliflower; so that there were 8 out of 58 cases in which fruit might be regarded as connected with the child's illness. Of 135 children under 3 years of age, not at the breast, whose deaths were inquired into, 2 ate fruit; the remaining 133 are distinctly stated not to have had any.

Of the 605 fatal cases of diarrhœa in Leeds in 1893, 66 per cent. occurred in houses either without drains or with drains not properly severed from the sewer, and one-fifth of the remainder (making 73 per cent.) had other sanitary defects. It is to the feeding-bottle and to the infection of its contents rather than to fruit that attention must be most especially directed in the preven-

tion of autumnal diarrhœa. From a study of a series of 21 cases Fischl⁶⁹_{Nov. 9, '98} comes to the conclusion that the acute gastro-intestinal catarrh, so fatal to infants in foundling asylums, etc., is in reality a manifestation of a form of septicæmia, the organs primarily infected being the lungs.

Freeman Walsh, of St. Paul,¹⁰⁵_{Jan. 15, '04} calls attention to the fact that an atmospheric condition which shows a high thermometer and a low barometer tends to interrupt the circulation and cause a venous hyperæmia, thereby changing the amount of blood-gases, O being diminished and CO₂ increased; this causes stimulation of Auerbach's plexus, situated in the intestinal wall, peristalsis being increased proportionately to the amount of stimulation, which sometimes is so great that the colon is emptied very often, the process being attended by severe cramps.

Crandall,¹_{Oct. 21, '93} in a paper on the types of gastro-intestinal disease prevalent in New York, finds that the character and type are modified by three factors: climate or season, social conditions, and food. It is not now the common belief that heat *per se* causes diarrhœa. It is only a powerful indirect factor lowering the vitality of the patient and favoring fermentative changes in milk.

Powell²²²_{July, '94} advocates following the plan adopted in New York of establishing depots where milk of doubtful quality could be Pasteurized and sold at cost. In default of such Powell relied chiefly on a mixture of white of egg and dilute lime-water, in the proportion of 1 egg to 2 ounces (62 cubic centimetres) of lime-water and 4 ounces (124 cubic centimetres) of boiled water. Better results follow the use of this than are observed after the use of any of the officinal artificial foods.

Brainard²²²_{July, '94} summarizes his treatment thus: First, an absolute cessation of all food for some hours. Second, pure, cool water, given freely. Third, locally, heat to the feet, stimulants to the abdomen, cold to the head. Fourth, antiseptic remedies, such as calomel, arsenite of copper, salol, bismuth, soda bicarb., as indicated. Opiates and astringents only when urgently indicated, and then with caution. Fifth, thoroughly-sterilized food in small quantities to begin the feeding. Powell frequently gives morphine hypodermatically to infants 6 months old, in doses of $\frac{1}{100}$ grain (0.00065 gramme), without any bad effects whatever.

Hurt,²⁰⁷_{June, '94} while indorsing the routine treatment by small

doses of calomel, also advises $\frac{1}{100}$ grain (0.00065 gramme) bichloride of mercury with 5 drops of a colorless solution of hydrastis. The bichloride has the property of lessening pain, checking the looseness of the bowels as well as the vomiting, largely obviating the use of opium. Stockard believes that sulphocarbolate of zinc, after calomel and irrigation, is one of the best antiseptics.

The odor of the stools enables us, according to Fitch,⁸¹ to determine two general classes of fermentation. The fermentation of the carbohydrate foods leads to the development of acids and gases, but under no circumstances to products with a putrid odor. Proteids yield either odorless or putrid products. When the latter are present, no meat, milk, fish, fowl, or eggs should be given, arrow-root, soda-crackers, or rice being substituted for a few days. Fermentation of the sugars, starches, and fats will produce the acid-smelling stool, which may cause intestinal ulcers. The acid stool may contain lumps of mucin, thrown down by the free fatty acids. Fitch thinks that all attempts to disinfect the intestinal canal by medicines have been disappointing. Salol and salicylates are of but little value, calomel and bismuth being the most reliable, though the latter must be given freely. He has had no success with lavage.

Taylor¹⁸⁶_{Aug., '94} suggests the following simple diarrhœa mixture: Subnitrate of bismuth, 4 drachms (16 grammes); pulverized nutmegs, prepared chalk, each, 2 drachms (8 grammes); sulphocarbolate of zinc, 12 grains (0.78 gramme); syrup of ginger, 3 fluidounces (93 cubic centimetres). Mix; shake. Sig.: One teaspoonful after each passage.

Marois¹¹⁸_{Dec., '93}⁵¹_{Mar., '94} has successfully used saline solutions or artificial serum. He prefers the physiological salt solution, which seems to be absorbed most readily, and Hayem's serum. The most practical method of introducing the fluid is subcutaneously into the lumbar or gluteal regions, antiseptic precautions being observed. The fluid forms a swelling beneath the skin, the disappearance of which can be accelerated by light massage.

Schneck⁶¹_{Dec. 10, '93} has found no remedy so efficient as pulverized gum opium combined with salicylate of bismuth. Manuel Septien, of Queretaro, Mexico,¹⁹_{Oct. 28, '93} withholds all food for twenty-four or forty-eight hours in cholera infantum, and gives water by the

mouth. This is at first vomited, but more is given until vomiting does not occur. Milk is forbidden for several days, then given greatly diluted with water. If it then disagree it is discontinued altogether and rice-water substituted. For the more chronic forms, nitrate of silver is recommended in the proportion of 0.05 gramme to 50 grammes of distilled water, calomel, or Van Swieten's liquor (bichloride of mercury), 6 drops every four or six hours. Normal salt solution is used subcutaneously.

Peruvian balsam, in doses of 0.20 to 0.50 gramme (3 to 7½ grains), is given by Muggia⁸¹⁴_{Feb. 1, '94} with beneficial results in acute and chronic gastro-enteritis. O'Brien¹⁰⁵_{Jan. 15, '94} has had more success with arsenite of copper than with any other single drug. He usually gives $\frac{1}{1000}$ grain (0.000065 gramme) to an infant every ten minutes, till $\frac{1}{100}$ or $\frac{1}{50}$ grain (0.00065 or 0.0013 gramme) is taken; then the same quantity every twenty or thirty minutes until $\frac{1}{100}$ grain (0.00065 gramme) or more is taken. Warm salt enemata are used with great benefit. Miller⁵¹_{Mar., '94} calls attention to the value of alkalies and aromatics combined with suitable diet.

In cases of summer diarrhœa, Solomon Solis-Cohen has observed⁹_{July 28, '94} that after the alimentary canal has been cleansed of irritating materials by the most available means, which may be, according to circumstances, lavage of the stomach, irrigation of the bowel, or the administration of a purge, usually calomel or a mixture of castor-oil and spiced syrup of rhubarb (equal parts), and after the diet has been duly regulated, satisfactory results will follow the administration of the following: Benzo-naphthol, 2 grains (0.13 gramme); bismuth salicylate, 2 grains (0.13 gramme); Dover's powder, $\frac{1}{2}$ grain (0.03 gramme). In capsule, cachet, or powder, for a child aged 2 years. All milk for the time being should be cut off. Barley-water and home-made beef-juice are the best substitutes; 10 to 20 drops of whisky or brandy should be given at each feeding. In the treatment of cholera infantum it is often necessary to change the diet at once. If the child be nursed by the mother we may change to cows' milk, condensed milk, some of the malted milks, or animal broths. Harwell⁸⁶_{July, '94} has often seen good results follow such a change.

INDEX TO VOLUME SECOND.

By N. I. DEVEREUX,

PARIS.

Abdominal section, technique.....	G- 61	Barlow's disease.....	K- 6	Brain, diseases, paralysis, miscella-	
Abortion.....	I- 26	Bardolini's gland, tumors.....	H- 13	neous.....	A- 23
cancer following.....	I- 21	Basal ganglia, tumor.....	A- 38	syphilis.....	A- 67
danger of forceps in.....	I- 27	Basitripsy.....	J- 38	tumors.....	A- 31
tubal.....	I- 26	Beer-drinking.....	F- 7	centrum ovale.....	A- 37
Abscess, cerebral.....	A- 44	Bell's paralysis.....	C- 18	cerebellum.....	A- 41
ovarian.....	G- 53	Berberi.....	C- 35	corpora quadrigemina.....	A- 39
Accouchement forcé.....	J- 30	Bladder, female, diseases.....	H- 23	cortex.....	A- 33
Acromegaly.....	C- 1	calculi.....	H- 27	frontal lobe.....	A- 35
Agaphia.....	A- 12	cystitis.....	H- 25	hydatid cysts.....	A- 31
Albuminuria in labor.....	F- 8	enuresis.....	H- 24	occipital lobe.....	A- 36
in pregnancy.....	I- 18	exploration.....	H- 23	pituitary body.....	A- 39
Alcoholism.....	F- 1	extrophy.....	H- 28	pons.....	A- 40
and depopulation.....	F- 4	injury in abdominal section.....	G- 66	Breast-feeding.....	L- 1
and insurance.....	F- 12	irritability.....	H- 24	galactophoritis.....	L- 1
and the nervous system.....	C-31; F- 1	prolapse in labor.....	J- 9	milk of nursing women.....	L- 1
and tuberculosis.....	F- 6	tuberculosis.....	H- 26	Breasts, in the newborn.....	K- 8
beer-drinking.....	H- 30	tumors.....	H- 27	Breech presentations.....	J- 4
extent.....	F- 9	Blennorrhagia in women.....	H- 30	Broad ligament, phlegmon, in labor.....	J- 43
heredity.....	F- 5	Blood-serum, of insane, toxicity of.....	E- 11		
in infants.....	F- 8	Bones, in muscular atrophy.....	C- 10	Cæsarian section.....	J- 35
medico-legal relations.....	F- 11	Brain, diseases.....	A- 1	Calculus, ovarian.....	G- 69
mortality.....	F- 10	abscess.....	A- 44	ureteral, in female.....	H- 34
obsession in.....	E- 27	aphasia.....	A- 10	vesical, in female.....	H- 27
prophylaxis.....	F- 13	agraphia.....	A- 12	Cannabismania.....	F- 22
treatment.....	F- 13	anomia and paramimia.....	A- 14	Cannabis Indica as a cause of insanity.....	E- 45
Almond poisoning, insanity from.....	E- 18	anuria.....	A- 14	Carbonic oxide, hemiplegia from.....	A- 16
Amenorrhœa.....	G- 5	auditory.....	A- 12	Cardiac affections in pregnancy.....	I- 14
Amimia.....	A- 14	in labor.....	J- 38	Caruncle, urethral.....	H- 32
Amusia.....	A- 14	motor aphasia.....	A- 11	Catheterization of ureters.....	H- 33
Amyotrophic lateral sclerosis.....	B- 18	treatment.....	A- 14	Centres, auditory.....	A- 3
Anaphrodisia.....	H- 1	visual.....	A- 13	choleocholus.....	B- 44
Anasarca in the newborn.....	K- 29	cerebro-spinal sclerosis.....	A- 68	common sensation.....	A- 4
Anencephalus.....	K- 25	epilepsy.....	A- 46	motor.....	A- 2
Anomalies in the newborn.....	K- 3	cardiac.....	A- 53	thermogenetic.....	A- 6
exomphalos.....	K- 4	general considerations.....	A- 46	visceral.....	A- 10
extrophy of viscera.....	K- 4	hystero-epilepsy.....	A- 57	visual.....	A- 2
hemophilia.....	K- 5	petit mal.....	A- 50	Centrum ovale, tumor.....	A- 37
of anus.....	K- 4	procurvise.....	A- 52	Cephalalgia.....	A- 37
of arms.....	K- 5	reflex.....	A- 58	Cephalhematoma.....	C- 41
of colon.....	K- 4	sympptomatology.....	A- 48	Cerebellum, lesions.....	A- 30
of head.....	K- 5	tardy.....	A- 56	physiology.....	A- 8
of hymen.....	K- 5	treatment.....	A- 59	tumors.....	A- 41
of peritoneum.....	K- 3	vertiginous.....	A- 56	Cerebral abscess.....	A- 44
of pleura.....	K- 3	lesions.....	A- 24	Cerebral diseases (see Brain).....	A- 1
polydactylia.....	K- 4	cerebellum.....	A- 30	Cerebral syphilis.....	A- 67
spina bifida.....	K- 5	cerebral peduncle.....	A- 30	Cerebral tumors.....	A- 41
Anomalies, of urethra.....	H- 28	embolism, thrombosis, aneurism.....	A- 26	Cerebro-spinal meningitis.....	A- 65
of uterus.....	K- 47	encephalitis.....	A- 28	Cerebro-spinal sclerosis.....	A- 68
of vagina.....	H- 20	hemorrhage.....	A- 24	Cervix uteri, diseases.....	G- 7
Antiseptics in labor.....	I- 44	hydrocephalus.....	A- 29	fissures.....	G- 7
Aphasia.....	A- 10	lead encephalopathy.....	A- 29	hypertrophic elongation.....	G- 7
agraphia.....	A- 12	miscellaneous.....	A- 30	stenosis.....	G- 8
amimia and paramimia.....	A- 14	optic thalamus.....	A- 29	trachelorrhaphy.....	H- 46
amusia.....	A- 14	traumatism.....	A- 27	defective drainage after.....	G- 11
auditory.....	A- 14	localization.....	A- 1	tuberculosis.....	H- 17
motor.....	A- 11	auditory centre.....	A- 3	Chaneroids of vagina.....	H- 10
puerperal.....	J- 38	cerebellum.....	A- 8	Chilblains, Raynaud's disease fol-	
treatment.....	A- 14	circulation.....	E- 3	lowing.....	C- 25
visual.....	A- 13	common sensations.....	A- 4	Chorea.....	C- 36
Apoplexy, body-temperature in.....	A- 16	frontal lobes.....	A- 7	and cerebral embolism.....	A- 25
Arachnoid, sarcoma of.....	A- 35	motor centres.....	A- 2	etiology.....	C- 36
Arsenic, neuritis from.....	C- 30	pituitary body.....	A- 2	neuritis from arsenic in.....	C- 38
paralysis from.....	C- 21	thermogenetic centre.....	A- 6	neuritis from arsenic in.....	C- 30
Arteries, cerebral disease.....	C- 27	visceral centres.....	A- 10	Climacteric, diseases.....	G- 5
Arthropathy in general paresis.....	E- 21	visual centre.....	A- 2	Clitoris, diseases.....	H- 1
in muscular atrophy.....	C- 10	meningitis.....	A- 63	anaprophidia.....	H- 2
Artificial feeding of infants.....	L- 2	cerebro-spinal.....	A- 65	anoridectomy.....	H- 3
Asphyxia in the newborn.....	K- 13	traumatic.....	A- 64	epithelioma.....	H- 1
Ataxia, Friedreich's.....	B- 11	tubercular.....	A- 66	Colporrhaphy.....	H- 22
hereditary cerebellar.....	B- 13	paralysis.....	A- 20	Common sensation, centre of.....	A- 4
Atherosclerosis.....	C- 21	bulbar.....	A- 20	Conception, and gonorrhœa.....	I- 4
double.....	B- 22	hemiplegia.....	A- 16	during puerperium.....	I- 3
Atrophy, muscular.....	C- 3	hysterical.....	A- 22	with persistent hymen.....	I- 3
Auditory centre.....	A- 3	infantile cerebral.....	A- 15	Confusional insanity, acute.....	E- 23

- Constipation in the newborn.....K- 2
 Convulsions in childhood.....C- 24
 Corpora quadrigemina, tumor.....A- 39
 Cortex, tumors.....A- 33
 Cramps, professional.....C- 27
 Cranioph, sporadic.....E- 34
 Cystitis, in female.....E- 25
 Cystocele, uterine, in female.....H- 32
 Cysts of brain.....A- 31
 of ovary.....G- 55
 of uterus.....G- 32
 Decidua maligna.....I- 20
 Delirium, acute.....E- 24
 Delusions, systematized.....E- 23
 Dementia paralytica.....E- 12
 Dentition.....L- 11
 Depopulation and alcoholism.....F- 4
 Diabetes and insanity.....E- 10
 and tabes.....B- 8
 paralysis of muscles of deglutition
 in.....A- 24
 Diaphragm, paralysis.....C- 19
 Diarrhea, infantile.....L- 14
 treatment.....L- 15
 Diophrasus tetrabrachius.....K- 24
 Dietetics of infancy.....L- 1
 artificial feeding.....L- 2
 breast-feeding.....L- 1
 Dietetics of infancy and childhood
 infantile disorders.....L- 1
 Diplegia, facial.....C- 15
 spastic.....B- 22
 Dropsy of the newborn.....K- 29
 Dysmenorrhea.....G- 6
 Dyspepsia in newborn.....K- 6
 Dysocia, fetal.....J- 19
 maternal.....J- 15
 Dystrophy, muscular.....C- 41
 Ear, diseases, and cerebral abscess
 hallucinations from.....A- 46, 64
 in insanity.....E- 17
 Eclampsia, in pregnancy.....I- 17
 puerperal.....J- 42
 Ectopic gestation.....G- 69
 Embolism, cerebral.....A- 26
 Empyema, subcutaneous, in labor.....J- 12
 Encephalitis.....A- 23
 Encephalopathy, saturnine.....E- 23
 Endometritis.....G- 13
 and pregnancy.....I- 8
 Enterocoele, vaginal.....H- 21
 Enuresis in the female.....H- 24, 29
 Epilepsy.....A- 46
 cardiac.....A- 53
 etiology and pathogenesis.....A- 46
 general considerations.....A- 46
 hyster-epilepsy.....A- 57
 insanity from.....E- 34
 reflex.....A- 58
 symptomatology.....A- 48
 tardy.....A- 56
 treatment.....A- 59
 vertiginous.....A- 56
 Erotism, morbid.....E- 28
 Erysipelas in the newborn.....K- 23
 in puerperium.....J- 39
 meningitis from.....A- 64
 Erythema in labor.....J- 39
 Erythromelalgia.....C- 49
 Exencephalus.....J- 9
 Exomphalos complicating labor.....J- 9
 in the newborn.....K- 4
 Exophthalmos, puerperal.....J- 43
 Exostrophy of bladder in female.....H- 28
 Extra-uterine pregnancy (see Preg-
 nancy, extra-uterine).....G- 69
 Eyes, diseases, and epilepsy.....G- 62
 in general paresis.....E- 21
 in insanity.....E- 13
 in neurasthenia.....C- 47
 in the newborn.....K- 8
 in traumatic neuroses.....D- 2
 visual centre.....A- 2
 Face presentations.....J- 3
 Facial paralysis.....C- 15
 Fallopian tubes, diseases.....G- 49
 anatomy.....G- 49
 hematosalpinx.....G- 52
 tyrosalpinx.....G- 53
 salpingitis.....G- 50
 salpingitis.....G- 50
 Feundation, artificial.....I- 2
 Fever, puerperal.....J- 39
 Fistula, in the female.....H- 35
 following abdominal operations.....G- 69
 ileo-vaginal.....H- 40
 Fistula, in the newborn.....K- 4
 persistent Gartner's duct.....H- 42
 recto-vaginal.....H- 38
 uretero-vaginal.....H- 40
 vesico-vaginal.....H- 40
 vesico-rectal.....H- 35
Foetus de dentis.....E- 26
Foetus de dentis.....E- 26
 Forcible delivery.....E- 23
 Fourchette, pathology.....H- 13
 Fractures, in newborn.....K- 23
 Friedreich's disease.....B- 11
 Frontal lobes, psychical function.....A- 7
 tumors.....A- 35
 Funis, fistula.....K- 23
 hemorrhage.....J- 21
 knots.....J- 21
 length of.....J- 21
 rupture during labor.....J- 9
 shortness.....J- 21
 treatment.....K- 28
 Gangrene, of vagina.....K- 22
 symmetrical.....C- 24
 Gartner's ducts, persistent.....H- 42
 Gastro-intestinal hemorrhage in the
 newborn.....K- 8
 2 Gavage of infants.....L- 13
 Gastric paresis.....E- 19
 Geniospasm.....E- 19
 Gestation, extra-uterine.....G- 69
 Gigitism and acromegaly.....C- 2
 Gonitis tabetica.....B- 9
 Gonorrhea and conception.....I- 4
 and puerperal fever.....J- 40
 and prostatic hypertrophy.....E- 15
 in.....K- 8
 in.....H- 17
 Great Britain, increase of insanity
 in.....E- 3
 Hematemesis in the newborn.....K- 8
 Hematocolpos.....H- 20
 Hematocolitis.....B- 34
 Hematosalpinx.....G- 49
 Hemorrhage, body-temperature in.....A- 6
 cerebral.....A- 24
 during delivery.....J- 14
 in the newborn.....K- 8
 post-partum.....J- 14
 Hemorrhage from ear disease.....E- 17
 from eye disease.....A- 17
 in general paresis.....E- 22
 in melancholia.....E- 25
 Hand-feeding.....L- 2
 infant food.....L- 2
 sterilization of milk.....L- 5
 Headache.....E- 23
 Hearing, centre for.....A- 4
 Heart disease, and hemiplegia.....A- 16
 and insanity.....E- 14
 cerebral embolism in.....A- 27
 cerebral hemorrhage in.....A- 27
 epilepsy from.....A- 53
 in labor.....J- 8
 in pregnancy.....I- 14
 in the newborn.....K- 10
 Heat, centre for.....A- 6
 Hebephrenia, gonorrhoeal.....E- 15
 Heredity in alcoholism.....F- 5
 hernia, tubal.....G- 53
 Hip joint, tubercle atrophy of.....B- 9
 Hydatid cysts of brain.....A- 31
 of spinal cord.....B- 36
 Hydatiform mole.....I- 20
 Hydrocele feminina.....H- 8
 Hydrocephalus.....A- 29
 and dysocia.....J- 19
 Hyman, diseases.....H- 3
 abnormalities.....H- 4
 atresia.....H- 4
 conception with persistent hymen.....I- 3
 cyst of, in newborn.....K- 5
 Hypnotism.....E- 41
 effects of music in.....E- 43
 Hysterectomy.....G- 34
 Hysteria.....E- 35
 and alcoholism.....F- 3
 and organic disease.....E- 18
 gangrene in.....E- 36
 narcolepsy.....E- 36
 stigmata in.....E- 35
 in newborn.....E- 36
 treatment.....E- 36
 Thomsen's disease in.....E- 23
 Hysterical paralysis.....A- 22; C- 17
 Hyster-epilepsy.....A- 57
 Hysterorrhaphy.....G- 24
 Icterus neonatorum.....K- 11
 Idiocy.....E- 30
 abnormality of scalp in.....E- 32
 causation.....E- 31
 genital organs in.....E- 32
 treatment.....E- 31
 Ileo-vaginal fistula.....H- 40
 Incontinence, urinary, in female.....H- 24
 Inoculation.....K- 11; L- 12
 Indian hemp as a cause of insanity.....E- 45
 intoxication from.....F- 22
 Inebriety, alcoholic.....F- 1
 and depopulation.....F- 4
 and insurance.....F- 12
 and nervous system.....C- 31; F- 1
 and tuberculosis.....F- 6
 beer-drinking.....F- 7
 delirium.....F- 4
 extent.....F- 9
 heredity.....F- 5
 hysteria.....F- 3
 in infants.....F- 8
 medico-legal relations.....F- 1
 mortality.....F- 10
 obsession in.....F- 27
 prophylaxis.....F- 13
 treatment.....F- 13
 Inebriety, morphinism, and kindred
 diseases.....F- 1
 Infantile eczema.....L- 2
 artificial food.....L- 2
 mothers' milk.....L- 1
 Infantile diarrhoea.....L- 14
 Infantile paralysis.....A- 15
 Infectious diseases and insanity.....E- 11
 Influenza, peripheral.....C- 19
 myelitis following.....B- 29
 Insanity.....E- 1
 acute confusional.....E- 23
 and aural disease.....E- 17
 and cholera.....E- 11
 and chorea.....E- 11
 and color-sense.....E- 13
 and diabetes.....E- 10
 and gonorrhea.....E- 15
 and heart disease.....E- 14
 and infectious disease.....E- 11
 and mammary gland.....E- 11
 and renal disease.....E- 13
 blood in.....E- 11
 early life, influences in.....E- 2
 epileptic.....E- 34
 following climacteric.....G- 68
 following gynæcological operations.....E- 15; G- 16
 from menstruation.....E- 14
 from overwork.....E- 16
 from poisoning.....E- 18
 general paresis.....E- 19
 general questions in psychiatry.....E- 1
 haphlephobia.....E- 23
 idiocy.....E- 30
 increase of.....E- 3
 induced.....E- 24, 26
 laws for.....E- 4
 mania, puerperal.....E- 16
 melancholia.....E- 25
 miscellaneous.....E- 23
 onychophagia.....E- 45
 paranoia.....E- 26
 pathology.....E- 9
 pelvic disease and.....E- 14
 political.....E- 22
 prevention of.....E- 1
 puerperal.....J- 39
 respiration in.....E- 12
 self-inflicted injuries in.....E- 17
 senile.....E- 24
 sexual.....E- 23
 sporadic erotism.....E- 34
 temperature in.....E- 45
 therapeutics.....E- 45
 management.....E- 43
 tremor in.....E- 13
 Insomnia, treatment.....E- 43
 Intestines, injuries, in dementia.....E- 17
 sarcoma of, in newborn.....K- 3
 Jaws, abscess, cerebral abscess fol-
 lowing.....A- 46
 Katatonia.....E- 26
 Kidney, diseases, in insanity.....E- 9
 in newborn.....K- 11
 in pregnancy.....I- 18
 Kraurosis of vulva.....H- 8
 Labia, perforation, in labor.....J- 8
 tumors.....H- 11

Labia, tumors, in labor.....	J-17	Mental diseases, hypnotism and sug-	K-10
Labor.....	J-1	gestion.....	E-41
anæsthesia.....	I-13; J-44	hysteria.....	E-35
basiotripsy.....	J-38	idiocy and degenerative psychoses.....	E-30
Cæsarian section.....	J-35	induced insanity.....	E-25
complications.....	J-6	melancholia.....	E-26
fetal malformations.....	J-9	paranoia and allied conditions.....	E-26
general diseases.....	J-8	pathology.....	E-9
infectious diseases.....	J-7	therapeutics.....	E-45
inversion of uterus.....	J-10	Mesoneuritis.....	C-31
maternal injuries.....	J-5	Metritis.....	G-13
maternal malformations.....	J-5	Metrorrhagia.....	G-5
rupture of uterus.....	J-11	Migraine.....	C-41
subcutaneous emphysema.....	J-9	Milk, sterilized.....	L-5
tumors.....	J-6	woman's.....	L-1
dystocia, fetal.....	J-19	Molluscum pendulum, of vulva.....	H-12
maternal.....	J-15	Monoplegia.....	A-23
forceps.....	J-23	brachial.....	C-18
forcible delivery.....	J-23	metritis.....	K-24
funis.....	J-21	amyelia.....	K-25
hemorrhage, of delivery.....	J-14	anencephalus.....	K-25
post-partum.....	J-14	cyclopia.....	K-25
induced.....	J-21	diocephalus tetrabrachius.....	K-24
multiple births.....	J-5	double monsters.....	K-26
physiology.....	J-1	ectopia of heart.....	K-26
placenta.....	J-12	ectopia of testis.....	K-26
detachment.....	J-13	exencephalus.....	K-25
retention.....	J-13	fetus papyraceus.....	K-25
placenta previa.....	J-12	sexless.....	K-27
Porro's operation.....	J-36	Morphitomania.....	F-17
premature.....	J-21	Morvan's disease.....	B-29
presentations.....	J-2	Motor centres.....	A-2
breach.....	J-4	Multiple births.....	J-5
face and forehead.....	J-3	Multiple neuritis.....	C-30
shoulder.....	J-4	Muscles, diseases.....	C-3
vertex.....	J-2	atrophy.....	C-3
Singer's operation.....	J-37	myositis.....	C-11
sympphysiotomy.....	J-25	traumatic.....	C-11
Lacerations of cervix.....	F-12; G-29; I-15	Myelitis.....	B-27
of perineum.....	G-31	Myopathy.....	C-3
of vagina.....	G-26	Myositis.....	C-11
Lactation.....	F-22; K-11	syphilitic.....	C-12
psychoses.....	J-39	traumatic.....	C-11
suppression of.....	I-63	Navi of vulva.....	H-12
Landry's paralysis.....	B-24; C-19	Nails, in traumatic neuroses.....	D-5
Larynx, paralysis.....	A-24	Narcosepsy.....	E-36
Lead poisoning.....	C-19	Nephritis in pregnancy in the new-	K-11
cephalopathy.....	A-63	born.....	K-11
paralysis.....	C-15	Nervous diseases, peripheral.....	C-1
Leprosy and syringomyelia.....	B-32	Nervous system, of newborn.....	K-18
Leptomenigitis in newborn.....	J-5	Neuralgia.....	C-38
Leukæmia in pregnancy.....	I-22	occipital.....	C-39
Lip, gonorrhœa of, in newborn.....	K-1	sciatic.....	C-39
Little's disease.....	B-22	tibial, in labor.....	J-39
Liver, diseases, in newborn.....	K-11	trigeminal.....	C-38
abscess, in labor.....	J-7	Neurasthenia.....	C-43
atrophy, puerperal.....	J-43	multiple.....	C-44
Localization, cerebral.....	E-18	syphilitic.....	C-30
spinal.....	B-40	Neuritis.....	C-30
Lungs, diseases, in newborn.....	K-13	alcoholic.....	C-31, 35; F-1
Malaria and beriberi.....	C-36	arsenical.....	C-30
and neurasthenia.....	C-46	from tea-drinking.....	C-32
Mamma, ovarian.....	G-56	in influenza.....	C-32, 34
hypertrophy, and insanity.....	E-11	mesoneuritis.....	C-31
Mania.....	E-18	circular.....	C-33
acute delirious.....	E-24	of median nerve.....	C-33
in labor.....	J-39	peripheral.....	C-33
Massachusetts, increase of insanity	E-3	rheumatic.....	C-32
in.....	E-3	Neuroses, traumatic.....	B-38; D-1
Massage during menstruation.....	G-76	vesical, in female.....	H-24
Measles in pregnancy.....	I-21	Newborn, diseases of.....	K-1
Median nerve, neuritis.....	C-30	alimentary canal.....	K-21
Melana neonatorum.....	C-2	aëria.....	K-21
Melancholia (see Mental diseases).....	E-25	constipation.....	K-2
Meninges, spinal, diseases.....	B-38	dyspepsia.....	K-23
Meningitis.....	A-63	gonorrhœa.....	K-1
cerebro-spinal.....	A-65	icterus neonatorum.....	K-11
idiopathic.....	A-63	melana.....	K-2, 5
traumatic.....	A-64	mucous concretion.....	K-2
tubercular.....	A-66	peritonitis.....	K-20
Menopause.....	G-5	pyæmic.....	K-3
Menstruation, disorders.....	G-3	anatomical defects.....	K-3
amenorrhœa.....	G-5	abdomen.....	K-3
and insanity.....	E-14	alimentary canal.....	K-4
cause.....	G-3	cranium.....	K-3
dysmenorrhœa.....	G-6	extremities.....	K-4
early.....	G-3	genito-urinary apparatus.....	K-4
effect of morphine habit on.....	G-17	thorax.....	K-3
massage during.....	G-76	bacteraemia.....	K-3
menopause.....	G-5	Barlow's disease.....	K-6
menorrhagia.....	G-5	bones.....	K-7
metrorrhagia.....	G-5	breasts.....	K-8
ovulation and.....	G-3	dysprosy.....	K-29
Mental diseases.....	E-1	eyes.....	K-8
acute confusional insanity.....	E-23	first cry of.....	K-23
and gynecological operations.....	E-67	fractures.....	K-8
general paresis.....	E-19	hemorrhage.....	K-10
general questions in psychiatry.....	E-1	heart.....	K-10
Newborn, diseases of, incubation.....	K-10	kidneys.....	K-11
nervous system.....	K-18	anatomy and physiology.....	K-18
paralysis.....	K-19	triangulus and tetanus.....	K-18
orbital tumor.....	K-7	pseudotuberculosis.....	K-6
respiratory apparatus.....	K-13	asphyxia.....	K-13
skin.....	K-21	erysipelas.....	K-22
severum.....	K-21	purpura hemorrhagica.....	K-21
syphilitic pemphigus.....	K-17	Molluscum pendulum, of vulva.....	H-12
sterno-mastoid hæmatoma.....	K-23	surgical injuries.....	K-23
temperature.....	K-1	teratology.....	K-24
thymus, enlargement.....	K-28	tumors.....	K-28
umbilicus.....	K-28	fistula.....	K-28
hemorrhage.....	K-28	hemorrhage.....	K-28
Nicotine habit.....	F-19	Obsession.....	E-27
Obstetrics and puerperal diseases.....	J-1	antiseptic.....	J-44
basiotripsy.....	J-38	Cæsarian operation.....	J-6
complications.....	J-19	dystocia, fetal.....	J-15
dystocia, maternal.....	J-15	forceps.....	J-23
forcible delivery.....	J-23	funis.....	J-14
hemorrhage.....	J-21	multiple pregnancy.....	J-5
physiology.....	J-1	placenta.....	J-12
premature labor.....	J-21	presentations.....	J-2
puerperal diseases.....	J-38	sympphysiotomy.....	J-25
Occipital lobes, tumors.....	A-26	Onomatomania.....	E-27
Onomatomania.....	E-27	Onychophagia.....	E-25
Ophthalmia neonatorum.....	K-8	Opiomania.....	F-16
Orbit, tumor, in newborn.....	K-7	Ovaries, diseases.....	G-53
abscess.....	G-53	calculus.....	G-53
cysts.....	G-55	insanity and.....	E-15
operations.....	G-56	complications.....	G-53
pregnancy.....	G-55; J-6, 17	sequelæ.....	G-67
technique.....	G-54	tuberculosis.....	G-54
Ovulation and menstruation.....	G-3	Pachymeningitis, cervical.....	B-38
Pachymeningitis, cervical.....	B-38	tuberculous.....	B-38
Papymænos fetus.....	K-27	Paralysis, agitan.....	B-28; C-13
Paralysis, agitan.....	B-28; C-13	arsenical.....	C-21
Bell's.....	C-18	brachial.....	C-21
bulbar.....	A-20	facial.....	C-15
general, of insane.....	E-19	hemiplegic.....	A-16
hysterical.....	A-22; A-17	infantile cerebral.....	A-15
infantile spasmodic.....	C-20	infantile spasmodic.....	A-20
in labor.....	K-19	Lead.....	C-19
Lead.....	C-19	miscellaneous.....	A-24
miscellaneous.....	A-24	of larynx.....	C-19
pseudohypertrophic.....	C-19	scapulo-humeral.....	C-22
spastic spinal.....	B-22	syphilitic pseudo, in newborn.....	K-20
trapezius.....	C-18	Paramania.....	E-26
Paramania.....	E-26	folie de doute.....	E-23
imperative ideas.....	E-26	obsession.....	E-27
sexual perversion.....	E-28	systematized delusions.....	E-28
Paraplegia, spastic.....	B-22	Paresis, general.....	E-19
Paresis, general.....	E-19	pathology.....	E-19

- Paresis, general, visual changes.....E- 21
 Parkinson's disease.....C- 14
 parotitis after operation.....G- 63
 Pelvic disease and insanity.....E- 14
 Pemphigus neonatorum.....K- 22
 Pericarditis, hemorrhagic, in insan-
 ity.....E- 18
 Perineum, lacerations.....I- 42
 instruments.....I- 44
 perineorrhaphy.....I- 44
 protection.....I- 42
 Perineuritic abscess in labor.....J- 7
 Peripheral nervous diseases, muscu-
 lar dystrophies, and general
 neuroses.....C- 1
 acromegaly.....C- 1
 areneal paralysis.....C- 1
 chorea.....C- 23
 Bell's paralysis.....C- 18
 beriberi.....C- 35
 brachial paralysis.....C- 19
 cephalalgia.....C- 41
 chorea.....C- 36
 convulsions.....C- 21
 diaphragmatic paralysis.....C- 19
 erythromelalgia.....C- 49
 facial paralysis.....C- 15
 hysterical paralysis.....C- 17
 Landry's paralysis.....C- 19
 lead paralysis.....C- 19
 migraine.....C- 41
 miscellaneous.....C- 23
 muscular atrophy.....C- 3
 muscular spasms.....C- 29
 myositis.....C- 11
 neuralgia.....C- 38
 neurasthenia.....C- 43
 neuritis.....C- 30
 paralysis agitans.....C- 13
 Parkinson's disease.....C- 14
 pseudopertrophic paralysis.....C- 19
 Raynaud's disease.....C- 24
 scapulo-humeral paralysis.....C- 22
 spasms and ties.....C- 27
 spasmic paralysis.....C- 20
 tetany.....C- 22
 Thomsen's disease.....C- 23
 tremors.....C- 22
 Peritonitis in labor.....J- 9
 in the newborn.....K- 20
 Phimosia, epilepsy from.....A- 59
 Pituitary body, function.....A- 7
 tumors.....C- 39
 Placenta.....J- 12
 detachment.....J- 13
 retention.....J- 13
 Placenta previa.....J- 12
 Pneumonia, aphasia in.....A- 11
 cerebral abscess following.....A- 46
 in puerperium.....E- 6
 meningitis from puerperium.....C- 64
 muscular atrophy following.....C- 10
 Poets and insanity.....E- 9
 Polioencephalitis.....A- 28
 Poliomyelitis.....B- 20
 Polydactylia.....K- 4
 Polynovositis, infectious.....C- 12
 Pons, tumors.....A- 40
 Porro's operation.....J- 36
 Post-partum hemorrhage.....J- 14
 Pregnancy, diseases.....I- 11
 abortion.....I- 26
 albuminuria.....I- 18
 cyst of broad ligament.....I- 12
 cardiac affections.....I- 14
 deficiency of liquor amnii.....I- 7
 decidualoma maligna.....I- 20
 eclampsia.....I- 17
 endometritis.....I- 8
 hysterectomy in.....I- 9
 in a left cornu.....I- 12
 leukaemia.....I- 22
 measles.....I- 21
 nephritis.....I- 19
 ovariotomy.....G-55; I- 9
 premature labor.....I-23; J- 21
 prolapse.....I- 13
 prolonged.....I- 6
 syphilis.....I- 16
 tetany.....I- 16
 tuberculosis.....I- 22
 tumors.....I-9, 20; J- 6
 Pregnancy, extra-uterine.....G- 69
 causation.....G- 69
 cornual.....I- 7
 diagnosis.....H- 5
 passage of ovum into tube.....H- 5
 Premature labor.....I-23; J- 21
 Pruritus, vulvar.....H- 5
- Psychoses (see Insanity).....E- 1
 nocturie.....F- 19
 puerperal.....E-16; J- 39
 Puerperal diseases.....J- 38
 anaemia, periculous.....J-38, 43
 aphasia.....A- 10
 atrophy of liver.....J- 43
 cellulitis and pelvic abscess.....G- 64
 eclampsia.....J- 12
 epilepsy.....J- 39
 exanthematous.....J- 39
 exophthalmos.....J- 43
 mania.....J- 39
 neuralgia, tibial.....J- 39
 paralysis.....J- 38
 phlegmon of broad ligament.....J- 43
 pseudorheumatism.....J- 39
 psychoses.....J- 39
 sciatica.....J- 43
 septicemia.....J- 39
 tetanus.....J- 39
 uterine hyperinvolution.....J- 43
 Purpura, hemorrhagic, in newborn.....E- 21
 Pyelitis.....H- 20
 Pyosalpinx.....G- 53
- Rachitis, in newborn.....K- 7
 Raynaud's disease.....C- 24
 Recto-vaginal fistula.....H- 39
 Reflexes, in general paresis.....B- 39
 Respiration, in insanity.....E- 12
 in the newborn.....K- 1
 Restiform body, tumor.....A- 40
 Rheumatism and chorea.....C- 37
 and vulvitis.....H- 5
 muscular atrophy following.....C- 52
 neuritis from.....C- 50
- Salpingitis.....G- 52
 Scapulo-humeral paralysis.....C- 22
 Scarlatina, in the puerperium.....J- 39
 Sciatica.....C- 39
 puerperal.....J- 43
 Spina bifida, neonatorum.....E- 21
 Sclerosis, amiotrophic lateral.....B- 19
 cerebral.....A- 31
 cerebro-spinal.....A- 68
 disseminated.....B- 26
 Scurvy, infantile, from artificial feed-
 ing.....L- 10
 pseudoscurvy.....E- 21
 Senile insanity.....E- 24
 Septicemia, puerperal.....J- 39
 Sexual perversion.....E- 28
 Shoulder presentations.....J- 4
 Silk-mill employes, insanity in.....E- 16
 Skin, diseases, in newborn.....K- 21
 Skull, trephining for depression
 of newborn.....K- 7
 Small-pox, spastic paralysis follow-
 ing.....B- 24
 Spasms.....C- 27
 muscular.....C- 29
 Speech, disorders of.....A- 10
 Spina bifida, myeloma.....K- 5
 Spinal cord, diseases.....B- 1
 Friedrich's ataxia.....B- 11
 hamatomyelia.....B- 34
 localization.....B- 40
 meningeal disease.....B- 38
 myelitis.....B- 27
 paralysis agitans.....B-29; C- 13
 atrophy.....B- 22
 spastic.....B- 22
 poliomyelitis, anterior.....B- 20
 reflexes.....B- 39
 sclerosis, amiotrophic lateral.....B- 18
 disseminated.....B- 26
 syphilis.....B- 16
 and acromegaly.....C- 2
 tabes dorsalis.....B- 1
 traumatic affections.....B- 36
 tumors.....B- 35
 Sporadic cretinism.....E- 34
 Stammering.....A- 15
 Stomatitis, tetany in dilatation of.....C- 35
 enousation.....B- 22
 treatment.....I- 1
 Sterno-mastoid, hematoma, in new-
 born.....K- 17
 Sternopagus.....K- 26
 Stills, neuritis from.....C- 35
 Stomatitis, tetany in dilatation of.....C- 35
 in gynecological cases.....G- 2
 Stricture, of urethra, in female.....H- 30
 Stuttering.....A- 15
- Sudden death in nervous disease.....C- 49
 Suggestive.....E- 41
 Suprarenal capsule, sarcoma, in
 newborn.....K- 11
 Symphysiotomy.....J- 25
 Symphysis pubis, rupture, in labor.....J- 8
 Syphilis, and epilepsy.....A- 47
 and facial paralysis.....C- 15
 and general paresis.....E- 12
 and tabes.....B- 1
 cerebral.....A- 68
 in pregnancy.....I- 15
 neuralgia in.....C- 40
 neurasthenia in.....C- 43
 of brain.....A-26, 68
 of newborn.....K- 9
 of spinal cord.....B- 16
 of vulva.....H- 10
 Syringomyelia.....B- 29
- Tabes dorsalis.....B- 1
 etiology and pathology.....B- 1
 symptomatology.....B- 5
 therapeutics.....B- 10
 Tea habit.....F- 20
 neuritis from.....C- 32
 Teeth, oblique in, in tabes.....B- 11
 Teething.....L- 11
 Temperature, in insanity.....E- 12
 in the newborn.....K- 1
 Teratoma of newborn.....K- 24
 Tetanus, in the newborn.....K- 18
 in the puerperium.....C- 26
 in pregnancy.....I- 16
 Thermogenetic centre.....A- 6
 Thomsen's disease.....C- 23
 Thrombosis, cerebral.....A- 26
 Thymus enlargement, in newborn.....K- 28
 Tic douloureux.....C- 38
 Tics.....C- 27
 Tobacco as a cause of aphasia.....A- 11
 Tobaccoism.....F- 19
 Torticollis from breech presentations.....J- 4
 Trachelorrhaphy.....H- 46
 Trapezium, paralysis of.....C- 18
 Traumatic neuroses.....D- 1
 etiology and pathology.....D- 10
 medico-legal bearing.....D- 9
 prognosis and treatment.....D- 9
 semeiology and diagnosis.....D- 1
 Tremors.....C- 22
 in the insane.....E- 13
 Trigeminal nerve, neuralgia.....C- 39
 Tubal disease.....G- 69
 Tubal pregnancy.....G- 69
 Tuberculosis, and alcoholism.....F- 6
 in pregnancy.....I- 22
 of bladder, in female.....H- 26
 of cervix uteri.....H- 17
 of meninges.....A- 66
 of ovaries and tubes.....A- 31
 Tumors, of brain.....G- 27
 of uterus.....G- 27
 of newborn.....K- 24
 Typhoid fever, and meningitis.....A- 64
 and labor.....J- 7
- Umbilicus, fistula.....K- 29
 hemorrhage.....K- 28
 treatment.....K- 28
 Uremia, hemiplegia from.....K- 28
 Urethral diseases.....H- 33
 calculus.....H- 34
 catheterization.....H- 33
 injuries during abdominal section.....G- 65
 urethritis.....H- 33
 uretero-urethral anastomosis.....H- 34
 Urethra, female, diseases.....H- 28
 abscess.....H- 31
 anomaly.....H- 28
 carcinoma.....H- 32
 cystocele.....H- 32
 dilatation.....H- 31
 prolapse.....H- 32
 tumors.....H- 33
 urethritis.....H- 30
 urinary incontinence.....H- 29
 Urine, after gynecological oper-
 ations.....G- 64
 in insanity.....E- 13
 Uterus, anomalies, pregnancy in.....J- 18
 uterine diseases.....H- 31
 atrophy, in labor.....J- 43
 displacements.....G- 14
 general considerations.....G- 1
 pelvic examinations.....G- 1

Uterus, diseases, relation of gastric to pelvic disease.....G- 2	Uterus, tubes, ovaries, pelvic tissue, diseases, general considerations.G- 1	Vagina, diseases, vulvo-vaginitis.....II- 13
inflammations.....G- 7	gynecological therapeutics.....G- 76	Vagina and external genitals, dis- eases.....II- 1
endometritis.....G- 12	hysterectomy.....G- 34	Vaginal microbes during labor.....I- 13
fissure of cervix.....G- 7	inflammatory disorders.....G- 7	Vaginismus.....II- 15
hypertrophic elongation of cer- vix.....G- 7	menstruation (<i>q.v.</i>).....G- 3	Vaginitis.....II- 16
laceration of cervix.....II- 46	ovarian disease (<i>q.v.</i>).....G- 53	Varicellæ, female.....II- 21
metritis.....G- 13	tubal disease (<i>q.v.</i>).....G- 69	Vertebral canal, tumors.....B- 35
trachelorrhaphy.....G- 11	tumors.....G- 26	Vertex presentations.....J- 2
tuberculosis of cervix.....G- 7	Vagina, diseases.....II- 14	Vesico-rectal fistula.....II- 40
inversion, in labor.....J- 10	anomalies.....II- 20	Vesico-vaginal fistula.....II- 35
rupture, in labor.....J- 11	atresia.....II- 19	Visual aphasia.....A- 13
tumors.....G- 26	bacteriology.....II- 14	Visual centre.....A- 2
carcinoma.....G- 29	cysts.....II- 20	Vulva, diseases.....II- 4
cyst.....G- 32	enterocele.....II- 21	chancroids.....II- 10
fibroids.....G- 26	foreign bodies.....II- 22	hydrocele.....II- 8
hysterectomy.....G-34, 47	gangrene.....II- 22	kraurosis.....II- 8
in labor.....J-6, 17	injuries in labor.....J- 9	pruritus.....II- 5
in pregnancy.....I- 9	new instruments.....II- 23	tumors.....II- 10
intra-ligamentary.....G- 34	prolapse.....II- 22	vegetations.....II- 9
Uterus, tubes, ovaries, and pelvic tissue, diseases.....G- 1	tumors.....II- 20	vulvitis.....H- 4
displacements.....G- 14	vaginismus.....II- 15	Winckel's disease.....K- 5
ectopic gestation.....G- 68	vaginitis.....II- 16	Word-blindness.....A- 13
	vaginitis infecting fœtus.....K- 6	Word-deafness.....A- 12

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467. *Bulletin de la Société royale de pharmacie de Bruxelles*.
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492. Baltimore Med. and Surg. Record.
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519. Journal of Materia Medica, New Lebanon, N. Y.
520. Gazeta lekarska, Warsaw.
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522. Bollettino medico cremonese, Cremona.
523. Kinesithérapie, Paris.
524. La médecine contemporaine, Paris.
525. Zeitschrift der Tokio medicinischen Gesellschaft, Tokyo.
526. Giornale della reale Società italiana d'igiene, Milan.
527. Bulletins et mémoires de la Société de thérapeutique, Paris.
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564. Progrèsul médical roumain, Bucharest.
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567. Sanitary Engineering, London.
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570. Quarterly compendium of Medicine, Philadelphia.
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576. Gesundheits-Ingenieur, Munich.
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583. Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam.
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739. *Giornale della reale Accademia di medicina, Torino.*
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741. *Ephemeris, Brooklyn.*
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743. *Het Maandblad voor Apothekers, Amsterdam.*
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